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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Economics
In Cooperation with
NORTH DAKOTA EXTENSION SERVICE

THE SARGENT COUNTY FARMER LOOKS FORWARD IN HIS ADJUSTMENT PROBLEMS

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FOREWORD

This report describes the information being used by the farmers in coping with their farm-management problems. It deals with trends in agriculture, the present economic situation of the county, and the first steps taken by these farmers in making their adjustments. The budgets contained in this report were developed by farmers living in the southwestern part of the county under the supervision of the Sargent County Agent, S. M. Thorfinnson, with technical guidance from the author.

Cooperation and advice given by members of the Department of Agricultural Economics and other members of the North Dakota Agricultural Experiment Station are gratefully acknowledged. The valuable advice and criticism given by T. S. Thorfinnson, Leader, Division of Farm Management and Costs, is appreciated.

Dr. E. H. Tyner, formerly with the North Dakota Agricultural Experiment Station, furnished the classification of Sargent County soils.

Olav Rogeness, of the Bureau of Agricultural Economics, assisted in the development of farm budgets through local planning groups.

The clerical work required in the classification of farms by type was furnished by the Works Progress Administration through official project number 3270, sponsored by the North Dakota Extension Service and the North Dakota Agricultural Experiment Station. Other members of the Bureau who helped are Olga Johnson, Keith H. Spencer, and Quentin H. Bierman. Temporary field employees who assisted are Loraine Daniels, Glen G. Bierman, and Ernest Johnson.

The illustrative material contained in this report, including the tables grouped after page 28, is an indication of the type of background information that farmer land use planning groups will find desirable. These kinds of data allow necessary factual determinations and can be rather quickly and easily assembled.

SUMMARY

Frequent severe droughts, grasshoppers, and serious wind erosion in the western part of the county, and low prices in general for farm products, imposed a strain on agriculture in Sargent County during the 1930's. Many farm owners lost their farms and many others suffered financial reverses. The stability of most of the farms was severely tried, but a number of farm units have been able to withstand the unfavorable agricultural situation of that decade. They have remained solvent, provided a decent living for the farm family, and maintained the soil in a satisfactory way.

Why did some succeed while others failed? That's the problem that faces planning groups and action agencies of Sargent County. These groups have raised questions pertaining to the right kind of farming system for the different parts of the county. For example: What kind of a cropping system will control wind erosion in the sandy areas of the western portion of the county? How large a farm will it take to provide a decent living with no radical change in type of farming? Would it be possible to supply a farm large enough to provide adequate livings for all farmers in the county, based on the major type of farming now found in the county? Is it possible to reorganize the present small farms so that they will provide a larger net income? Can the income of a farm be bolstered through the addition of more milk cows, more hens, or more brood sows? Would it be profitable to provide for more livestock by substituting additional acreages of feed crops for cash-grain crops on some of the land? What other problems face farmers when they attempt to make desirable shifts in the organization of their farm business?

Farmers in Sargent County are already attempting to face these problems through group efforts. Planning groups are working out farm organizations adequate to support farm families under the conditions in that county. Their job also is to discover methods of increasing the stability and security of farming in the county.

In early stages of settlement in the county, cash-grain production was the most important farm enterprise. As late as 1890 practically no cattle were sold. Wheat production increased up to 1920 when farmers turned partly to production of feed crops for livestock. Almost all the principal crops reached their peak in the 1920's, but fell off in the 1930's, to the extremely dry weather. All the principal kinds of livestock reached the highest point of production in the twenties but declined along with crops during the dry years. Sheep numbers were an exception--they expanded during the thirties. Cattle have always been the dominant kind of livestock, and their numbers have fluctuated the least. Farm numbers have steadily increased since 1890, reaching their peak in 1935. Since 1910 the average farm size has decreased. Tenancy has risen steadily since the county was settled. Average annual precipitation has varied greatly, ranging from 36 inches in 1916 to 9 inches in 1936, with a yearly average of 20 inches. The last decade has been exceedingly dry.

The western two tiers and some of the townships in the eastern and southern parts of the county contain large tracts of sandy marginal land suitable for cultivation only under favorable conditions, in addition to tracts of land mainly suitable for pasture. Sixty-three percent of the land has been classified as suitable for cultivation, 5 percent suitable mainly for grass, and the remainder suitable for cultivation only under conditions of good management, favorable topography, adequate moisture, and good prices. Sixty-five percent of land is under cultivation, but much of this has poor soil, some of the good soil is in pasture. During the drought of the thirties, much of the sandy land was severely damaged by wind erosion. The worst eroded area is located in the southwestern part.

The sandy soils are mostly devoted to the production of feed crops, while wheat is the important crop on the heavier soil. Forty-eight percent of the farms are livestock farms, 32 percent general farms, and 11 percent are cash-grain units. In 1938 the 1,233 farms averaged 412 acres and ranged from 80 to over 1,000 acres in size. Approximately one-fourth were quarters, one-third half-section farms, and one-fourth were three-quarter section farms. Most of the larger farms are located in the western part of the county. The average-size farm on the poor soils is 73 acres larger than the average-size farm on good soils, but has only 15 acres more of cultivated land. While livestock farms are important throughout the county, the western third is made up almost entirely of livestock farms. In the rest of the county more emphasis is placed on general and cash-grain farming. In 1935, 48 percent of the farms were operated by tenants, 22 percent by part-owners, and 30 percent by full-owners.

Sargent County farmer planning groups, aided by a representative of the Bureau of Agricultural Economics, have already begun the task of solving their farm-adjustment problems. One group of farmers from the light soil area and one group from the heavy soil area in the southwestern part of the county have begun to prepare farm budgets. The farmers in the good soil area recommended a 320-acre farm, while those in the poor soil area recommended a unit somewhere between 320- and 480-acres. This recommendation warrants serious consideration, as 61 percent of the farms on good soils and 52 percent of the farms on the poor soils are less than 400 acres in size. In making further recommendations, it will be necessary to consider developing farm organizations which will increase the income without enlarging the farm size, in addition to conserving the soil, especially in the sandy areas. Any recommendations further to increase the size of farms will necessitate considerable shifting of population.

THE SARGENT COUNTY FARMER LOOKS FORWARD IN HIS ADJUSTMENT PROBLEMS (NORTH DAKOTA)

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By Lloyd E. Jones, Junior Agricultural Economist
Bureau of Agricultural Economics

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AGRICULTURAL HISTORY AND LOCATION OF THE COUNTY

Location

Sargent County is in southeastern North Dakota. It is bounded on the south by South Dakota and is located within the second tier of counties west of the Minnesota State line (fig. 1). It is rectangular in shape, being 36 miles long and 24 miles wide. It has an area of about 834 square miles, or 533,760 acres.

Railroads Aided Settlement

The first settlers came to Sargent County in the eighties. As early as 1881, there were a few settlers here; most of them located in the eastern part of the county along the Wild Rice River. In the fall of 1882, the Northern Pacific Railroad was completed as far as Milnor, and in the spring of 1883, many settlers came in to take homesteads. By this time, the greater part of the county had been surveyed. From 1883 to 1886, the Great Northern Railroad and the Minneapolis, St. Paul and Sault Ste. Marie Railroad were completed across the county. This development added greatly to the shipping facilities of the county and brought a rapid increase in settlement. The county was organized in 1883. 1/

In 1890 there were 277,917 acres in farms (fig. 2 and table 9). By 1910, this number had increased to 484,909 acres and since has remained around this figure.

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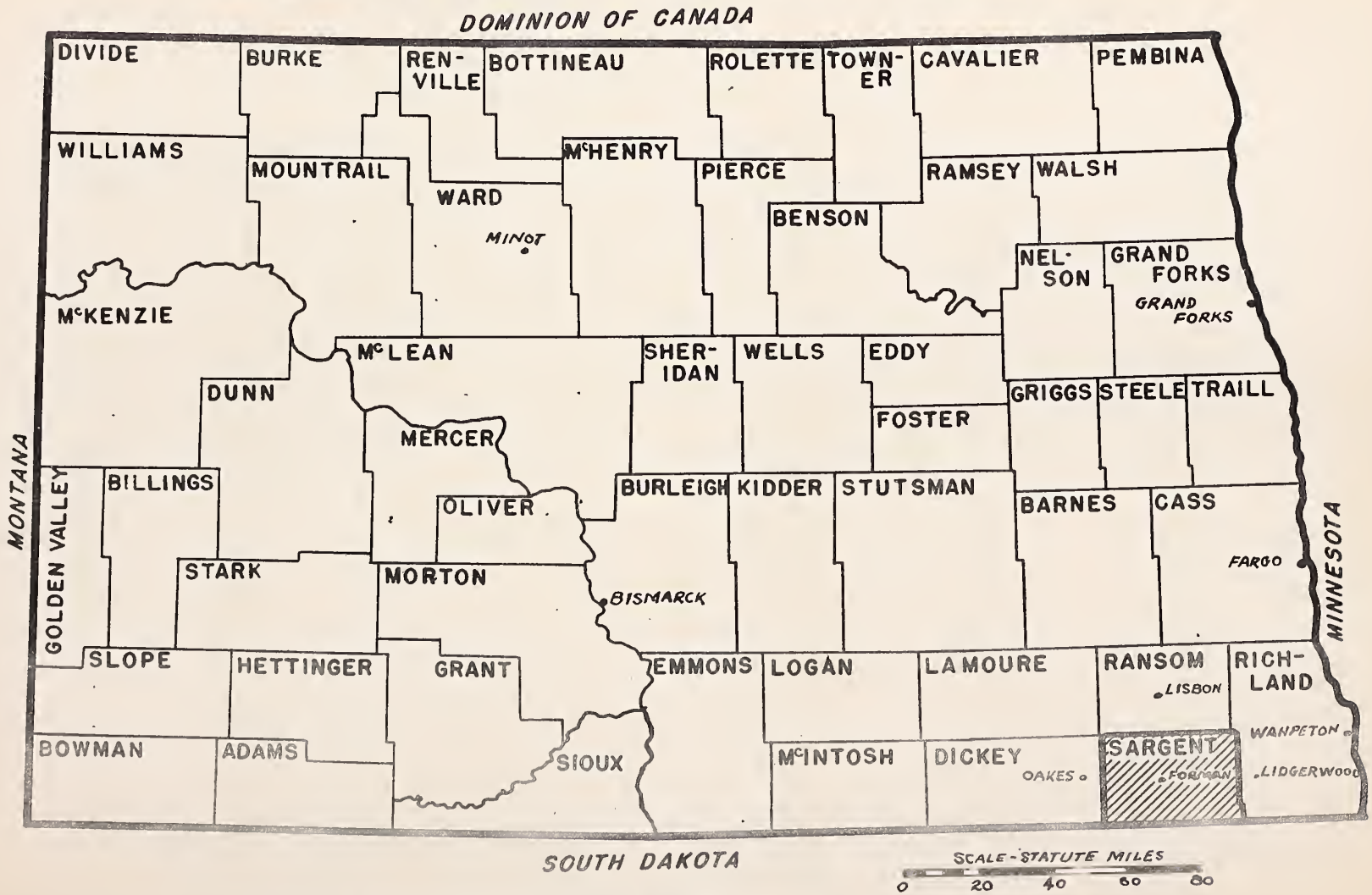
1/ Soil Survey of Sargent County, N. Dak., by Bureau of Chemistry and Soils, U. S. Dept. of Agr.

LOCATION OF SARGENT COUNTY, NORTH DAKOTA

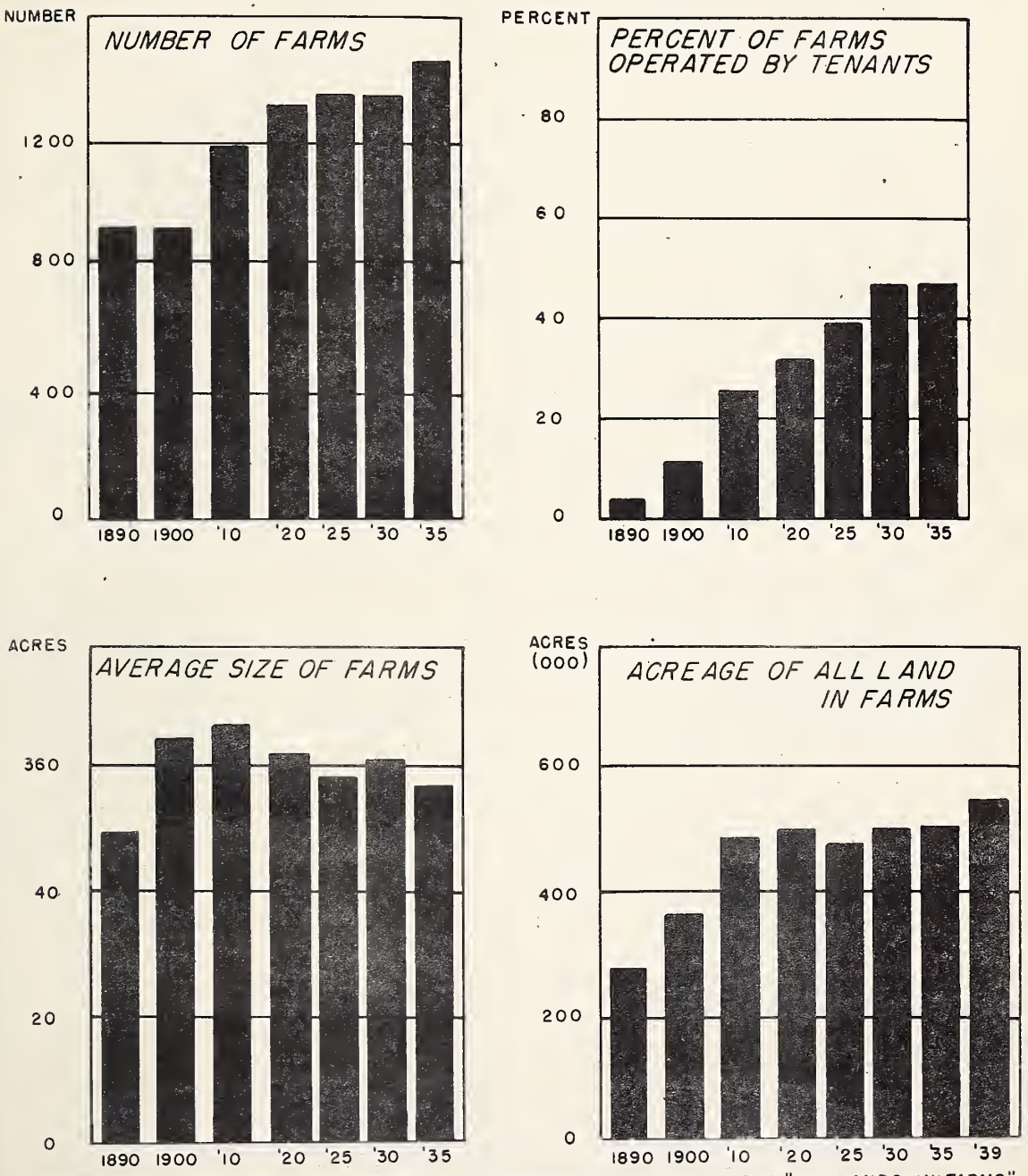


NEG. 38828 BUREAU OF AGRICULTURAL ECONOMICS.

FIGURE 1

ACREAGE OF ALL LAND IN FARMS, NUMBER OF FARMS, PERCENT OF TENANCY AND THE AVERAGE SIZE OF FARMS FOR THE YEARS 1890-1900-1910-1920-1925-1930-1935

SARGENT COUNTY, NORTH DAKOTA



SOURCE: ALL DATA FROM U.S. AGRICULTURAL CENSUS EXCEPT DATA FOR "ALL LANDS IN FARMS" WHICH IS FROM THE AGRICULTURAL MARKETING SERVICE

NEG. 38829 BUREAU OF AGRICULTURAL ECONOMICS

FIGURE 2

Population Doubled Since 1890

The United States Census for 1890 gave a total population of 5,076. Between 1890 and 1900, there was an increase to 6,039, and during the next 10 years, the population increased to 9,202. The increase from 1910 to 1920 was slight. The 1930 census showed 9,298 inhabitants, an actual decrease in population from 1920, when there were 9,655.

The extreme eastern part of the county was settled largely by immigrants from Poland, many of whose descendants are still there. A large percentage of the settlers around Cayuga, Rutland, and Milnor were natives of Minnesota, Wisconsin, and States as far east as New York. A number of German farmers settled near Forman. Much of the county was settled by people of Scandinavian ancestry. Settlers from Minnesota, Wisconsin, and the Central States comprise most of the American-born population. 2/

Number and Average Size of Farms

According to the U.S. Census the number of farms in the county has increased steadily since 1890 (fig. 2). In 1890, there were 935 farms. Farms increased to 1,191 by 1910, to 1,355 by 1930, and to 1,467 by 1935.

The average size farm in 1890 included about 297 acres. Farms averaged 407 acres in size in 1910, the highest average between 1890 and 1935. Since 1910, farms have steadily become smaller. In 1920, farms averaged 374 acres; in 1930 they had decreased to 365 acres; and by 1935, to 341 acres.

In 1890, only 4 percent of the farms were tenant-operated (fig. 2). Such a small amount of tenancy probably reflects the homesteading that occurred in the first years of settlement. By 1900, the number of tenant-operated farms had increased to 11 percent; by 1910 to 25 percent; by 1920 to 32 percent; by 1925 to 39 percent; and by 1930 it had increased to 47 percent, remaining at that percentage figure for the year 1935.

Wheat is Most Important Crop

Wheat has always been the most important crop for Sargent County. In 1890, wheat occupied 83,098 acres of the 99,098 acres of cropland (fig. 3). The Soil Survey of Sargent County, North

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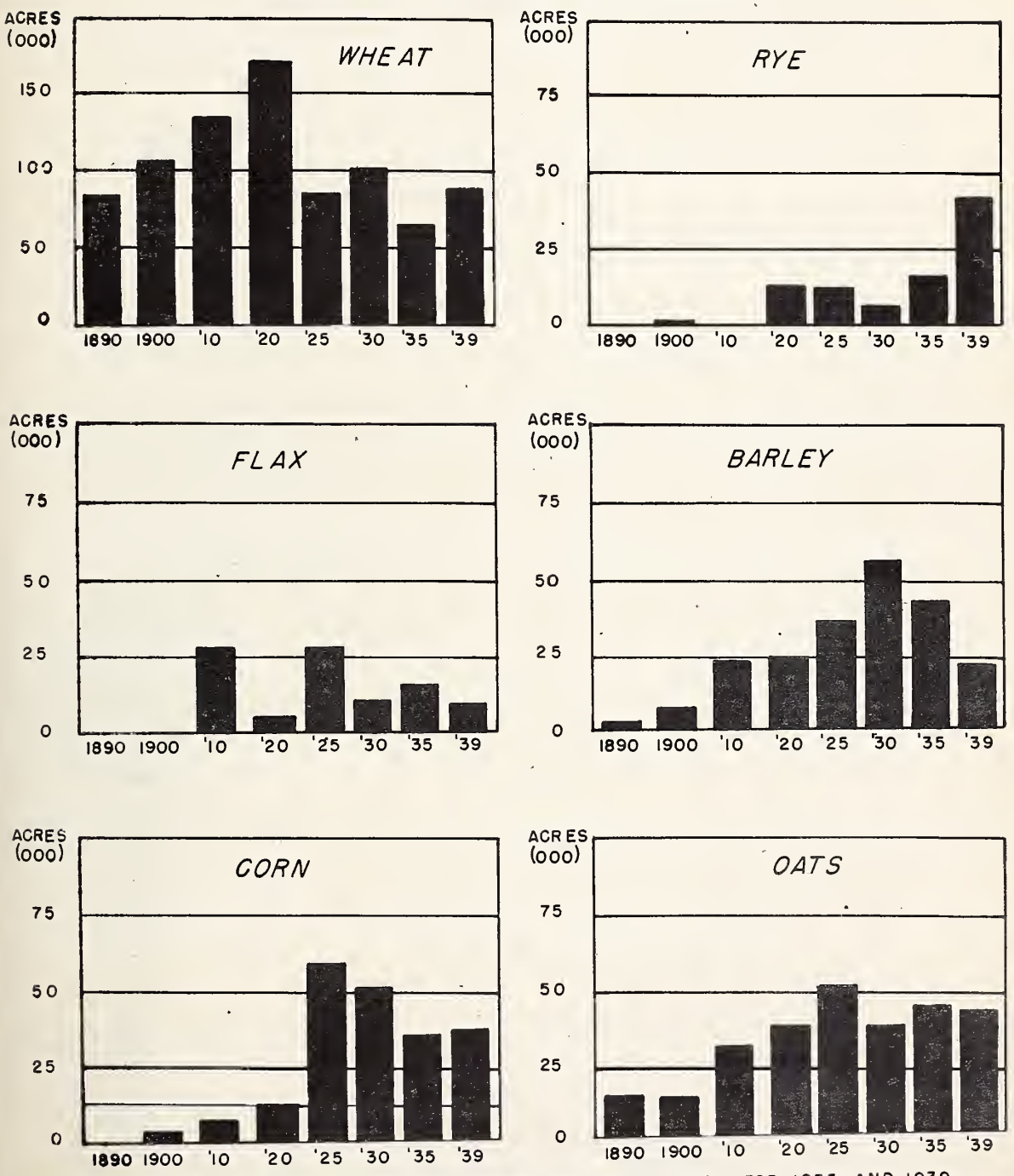
2/ Soil Survey of Sargent County, North Dakota, by Bureau of Chemistry and Soils, U.S. Dept. Agr.

TRENDS IN ACREAGES FOR THE PRINCIPAL CROPS FOR THE YEARS 1890-1900-1910-1920-1925-1930-1935-1939

SARGENT COUNTY, NORTH DAKOTA



SOURCE: U.S. AGRICULTURAL CENSUS WITH THE EXCEPTION OF DATA FOR 1935 AND 1939 WHICH ARE ESTIMATES FOR THAT PERIOD FROM AGRICULTURE MARKETING SERVICE

NEG. 38830 BUREAU OF AGRICULTURAL ECONOMICS

FIGURE 3

Dakota, published by the Bureau of Chemistry and Soils, says, "In the early stages of settlement in Sargent County, the production of grain was practiced almost to the exclusion of every farm enterprise. As late as 1890 practically no cattle were sold from the county."

From 1890 to 1920, the trend in wheat acreage was upward, reaching an all-time high of 172,705 acres in 1920. But since 1920, the trend in wheat acreages has been reversed, and the acreage devoted to wheat has been around 102,577 acres or less.

Up to and including 1935, rye was a relatively unimportant crop but since 1935 the acreage of rye has increased.

The trend in flax acreage was sharply upward after 1890, reaching a total of 27,773 acres in 1910. This was the highest flax acreage reported for the county, but by 1920 the flax acreage had decreased to 5,534 acres. A severe reduction in flax came when other crop acreages were at their highest levels, and was caused by heavy infestation of flax wilt. In 1925, the acreage of flax increased to 27,505 acres, a five-fold increase compared with 1920, but flax has been a relatively unimportant crop here since 1925.

Acreages of barley have increased steadily from 2,190 acres in 1890 to 55,593 acres in 1930, the top of the barley acreage cycle. Since 1930, this trend has been sharply reversed, making barley one of the less important crops.

Corn acreage was unimportant before 1910, but increased sharply in 1920, reaching a high point in 1925. Since then the trend has been sharply downward.

Acreage devoted to oats increased steadily up to and including 1925. Since 1930, acreage of oats has remained relatively steady at levels slightly less than those of 1925 (fig. 3).

It would appear that crop production in Sargent County reached its peak during the twenties. Since that time, the total acreages of most of the crops have steadily decreased. The only exception is rye - the rye acreage has more than trebled since 1920.

Rainfall Very Low During the Last 10 Years

The spread between the highest and lowest annual precipitation for the period 1892-39 has been greater than the average for the same period. The average annual precipitation in Sargent County has varied greatly since 1892, ranging from a low point

of 9.07 inches in 1936 to an extreme high of 35.51 in 1916, a spread of 26.44 inches (fig. 4 and table 14). The average annual precipitation for the period 1892-1939 is 20 inches. The annual precipitation for the period 1931-39 averaged 17.27 inches, compared with an average of 20.75 inches for 1921-30, of 21.03 inches for 1911-20, 20.99 inches for 1901-10, and 19.71 for the period 1892-1900. During the 9 years within the period 1931-39, there were 6 years when the precipitation was below normal, compared with only 3 years which were below normal during the 10 year period of 1921-30.

Average monthly precipitation is highest during the spring and summer months. The largest average amount, slightly over 3.50 inches, falls during June. May, July, and August with averages between 2.57 inches and 2.84 inches, ranked next in average monthly rainfall. Starting with January, with 0.52 inches, the average monthly precipitation increases each succeeding month reaching the high point of 3.59 inches in June. From then on, the precipitation decreases for the remainder of the year to 0.52 of an inch for December. The average monthly precipitation during 1892-1939 was 1.67 inches (fig. 4).

The precipitation during the growing season has also varied greatly, averaging 9.13 inches. The largest amount of precipitation, 22.04 inches, was in 1916, and the lowest amount, 2.59 inches, was in 1936 (fig. 4).

Cattle Dominate in Livestock Enterprises

Cattle have always been the most important kind of livestock raised in Sargent County, with the exception of 1925 when hog numbers exceeded cattle numbers by around 6,000 head (fig. 5).

The trend in cattle numbers was sharply upward from 1890 to 1920 inclusive, reaching a high point in 1920. Since 1920, the trend in cattle numbers has been steadily downward but the number of cattle was higher in 1939 than in 1935.

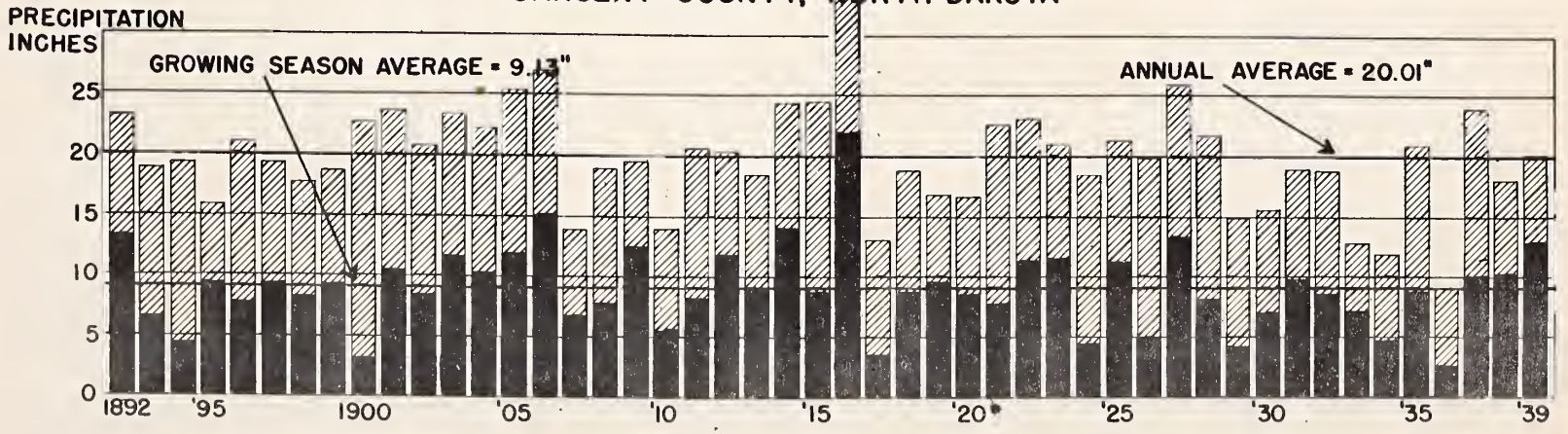
Trends in horse numbers were steadily upward from 1890 to 1920. Since then, this trend has reversed itself and has been steadily downward, probably because of introduction of the tractor.

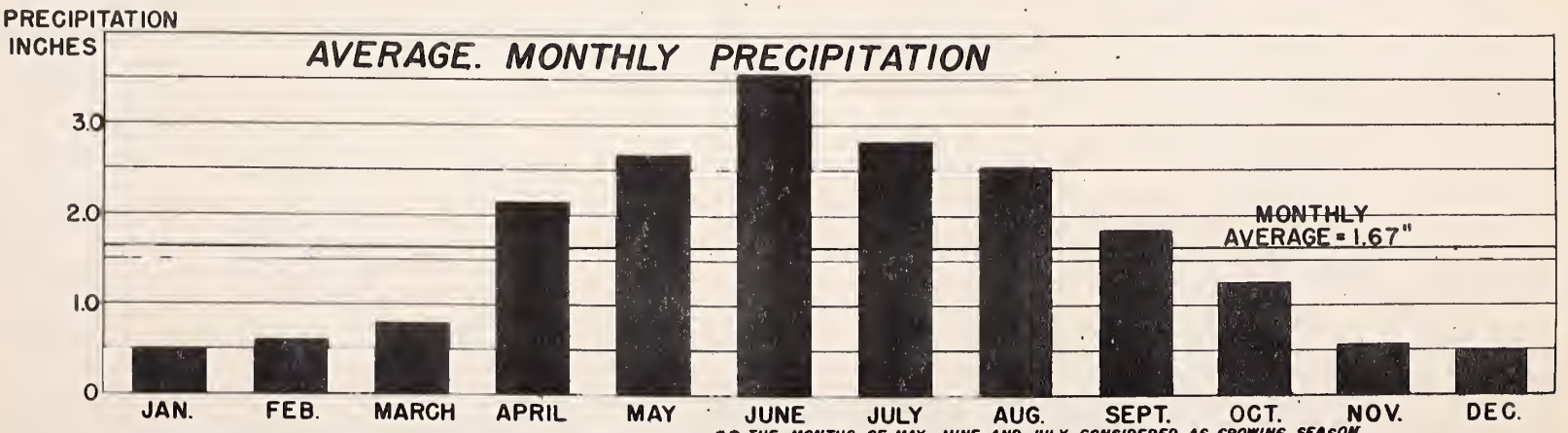
Hogs increased more rapidly than any other kind of livestock during the period 1890-1925. From 1925 to 1935 however, the trend in hog numbers was drastically downward. The figures for 1939 showed a considerable increase over the figures for 1935.

It is interesting that the trends in sheep numbers are almost directly opposite those of other livestock during the period 1890-1939. In 1900, there were 9,102 head of sheep in the county. During the next three census periods, sheep numbers

ANNUAL, GROWING SEASON** AND AVERAGE MONTHLY PRECIPITATION 1892 — 1939

SARGENT COUNTY, NORTH DAKOTA





SOURCE: U. S. WEATHER BUREAU RECORDS.
READINGS AT FORMAN EXCEPT AS NOTED.

** THE MONTHS OF MAY, JUNE AND JULY CONSIDERED AS GROWING SEASON.

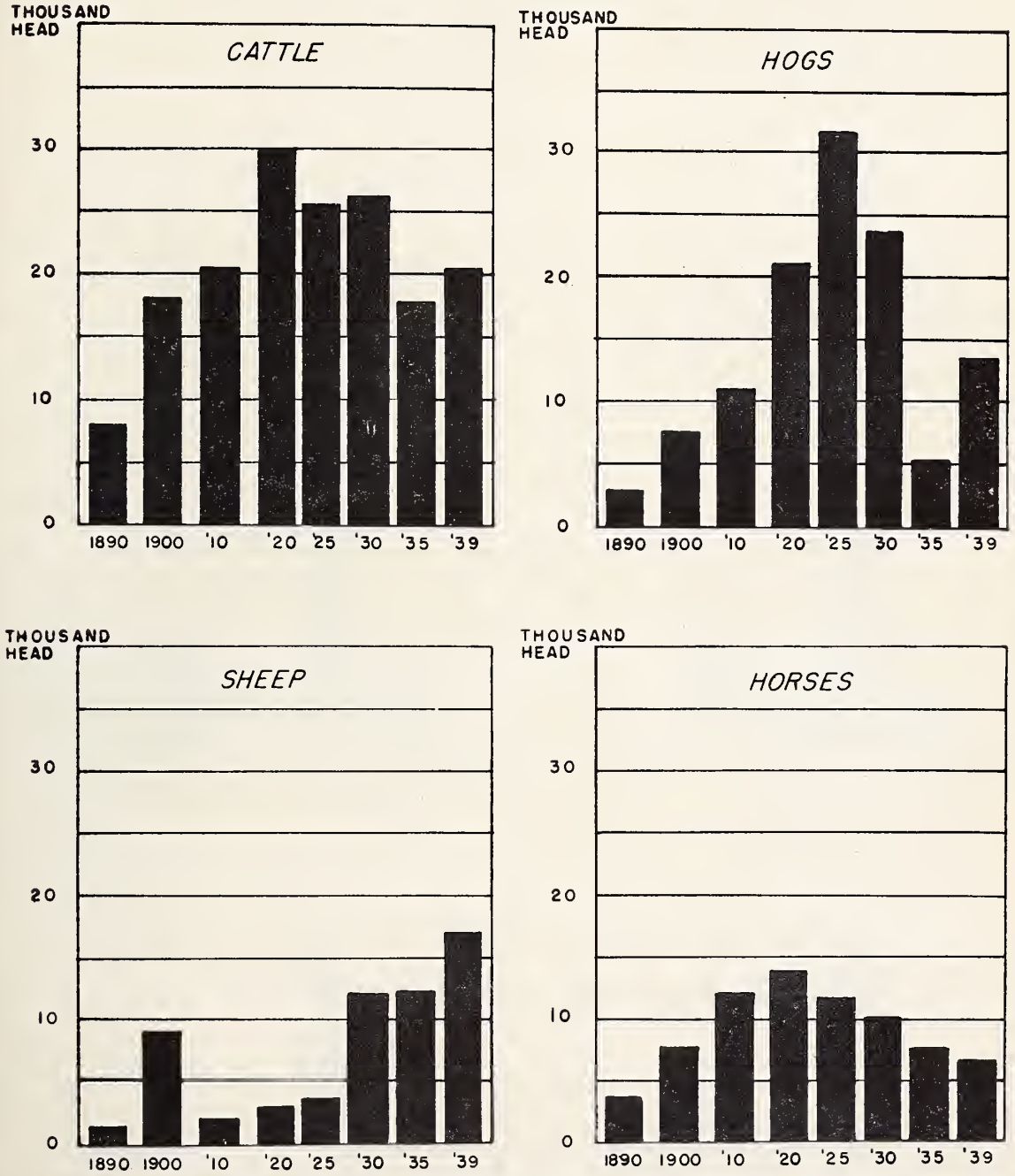
*FORMAN DATA NOT AVAILABLE FOR 1920. ELLENDALE DATA USED.

BUREAU OF AGRICULTURAL ECONOMICS.

FIGURE 4

TRENDS IN NUMBERS FOR THE PRINCIPAL KINDS OF LIVESTOCK FOR THE YEARS 1890-1900-1910-1920-1925-1930-1935-1939

SARGENT COUNTY, NORTH DAKOTA



SOURCE: U.S. AGRICULTURAL CENSUS WITH EXCEPTION OF DATA FOR 1939 WHICH ARE ESTIMATES FROM AGRICULTURAL MARKETING SERVICE.

NEG. 38831 BUREAU OF AGRICULTURAL ECONOMICS

FIGURE 5

averaged around 3,000 head. These were the lowest points in sheep numbers since 1890, whereas the other classes of livestock raised in the county had their highest numbers during these periods. In 1930, sheep numbers had increased to 12,077. In 1939, sheep numbers reached 17,000 head, an all-time high for Sargent County.

Most Farms Have 260 to 499 Acres

The size of most farms has averaged from 260 to 499 acres since 1900 (fig. 6). This size group includes all of the half-section and three-quarter section farms. Farms of 99 acres and less have remained in about the same proportion to total farms in all of the census periods since 1900. But, in the size group of 100 to 174 acres, which includes farms of one-quarter section, there has been considerable fluctuation in numbers and percentages of all farms. In 1900, there were 28 percent of all farms in this size group, while in 1910 this figure had dropped to 19 percent (table 5).

The proportion of 100-174 acre farms remained about the same from 1910 to 1930, averaging around 18 percent of all farms, but in 1935 the number of farms in this size group increased, to include almost one-fourth of all farms in the county.

There has been a tendency toward a decrease in the proportion of farms of 500 or more acres. Twenty percent of the farms were of 500 or more acres in 1900. This increased to 22 percent in 1910, but since then the proportion of these farms has steadily decreased. In 1935, only 15 percent of all farms were of 500 acres or more. (table 5).

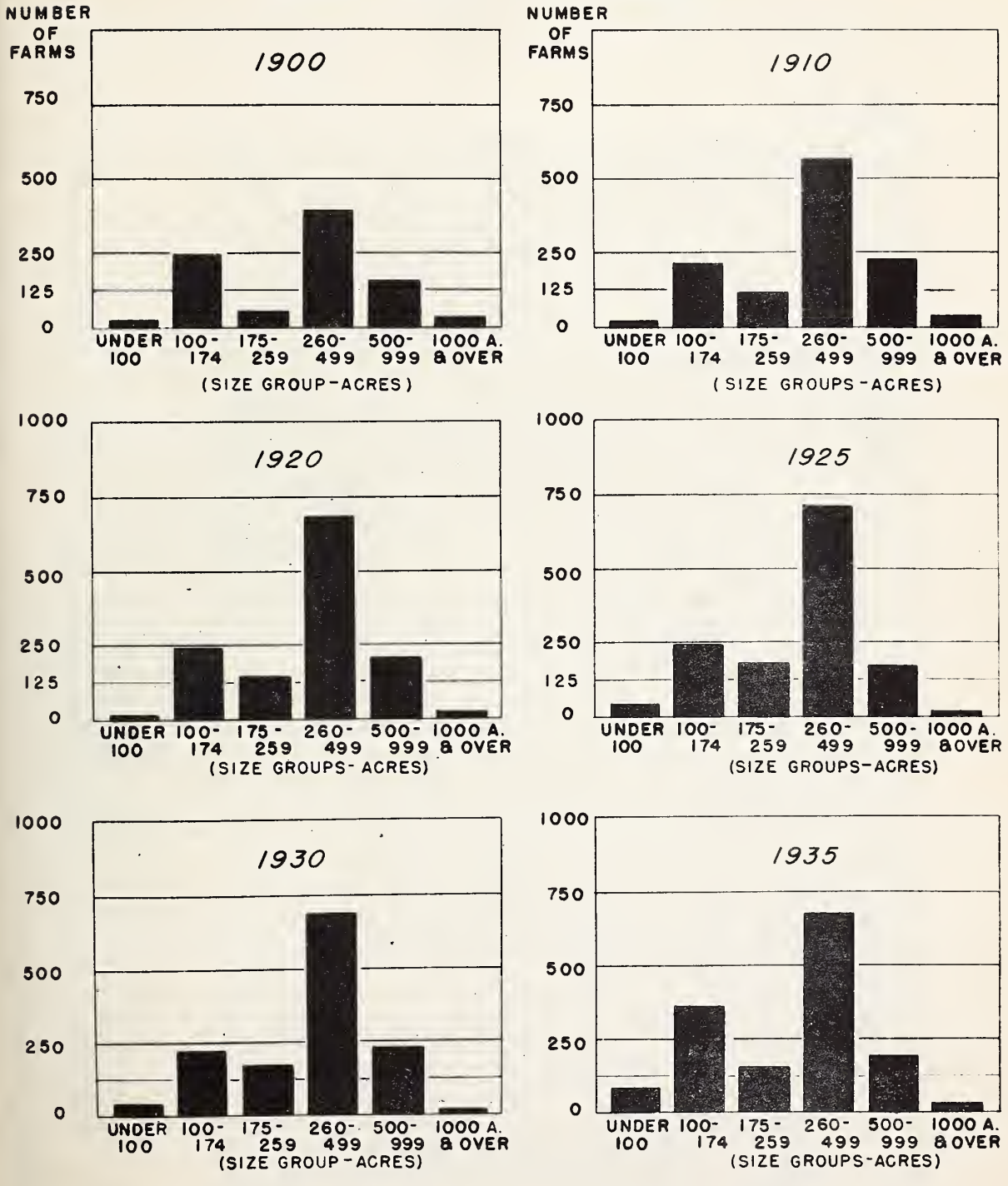
DESCRIPTION OF THE PRESENT SITUATION OF THE COUNTY

Large Tracts of Marginal Land

Soil is one of the most fundamental of the physical factors underlying economic problems. The greater share of the land suitable mainly for grass in Sargent County is found in Southwest Township (Township 129, Range 58) although a few elongated tracts of this land are located in the southern and eastern tiers of townships. Large tracts of marginal land (soils suitable for cultivation only under favorable conditions) are found in the two western tiers of townships. Fairly large tracts of marginal land are scattered in the eastern and southern tiers of townships. Significant areas of marginal land are found in the sand areas in the northeast corner of the county and in the hilly areas in the southeastern part. The central

DISTRIBUTION OF FARMS BY SIZE GROUPS FOR THE YEARS 1900-1910-1920-1925-1930-1935

SARGENT COUNTY, NORTH DAKOTA



PREPARED BY
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SOURCE: U.S. CENSUS.

FIGURE 6

part, while unlike the remainder of the county, does not contain many large tracts of marginal soils but does contain a large number of small tracts scattered widely over the entire area (fig. 7). These small tracts represent "pot-holes" with poor drainage. 3/

Apparently 63 percent of soils of the Sargent County area are suitable for cultivation and 4.7 percent are suitable mainly for grass. The remaining one-third consist of soils suitable for cultivation only under conditions of good management, favorable topography, adequate moisture, and good prices.

Submarginal Land in Cultivation

A false impression might be created by comparing the acres of land in cultivation with the acres of land suitable for cultivation. Sixty-five percent of the land is now in cultivation, but 63 percent of the land is suitable for cultivation. A considerable acreage of poor soil is cultivated in the sandy areas in the western part of the county and in the poorly drained pot-holes in the central part, as indicated by a comparison of the present land use with the use suitability. (See figs. 7 and 8.) However, considerable acreages of good soil are also found in pasture throughout the county.

The use of land by townships and the relative importance of wheat in the cropping system are indicated in figure 9. The importance of wheat varies from relative insignificance in the western third of the county to a position of major importance in the eastern and southern portions. Although a large amount of marginal soils and soil suitable mainly for grass is under cultivation in the two western tiers of townships, only a small part of this land is devoted to wheat. For example, in Brampton township only 7 percent of the land is devoted to wheat, whereas, roughly, one-fourth of the land is used for the production of wheat in the townships of Tewaukon, Marboe, Ransom, Kingston, Herman, Hall, Shuman, and Weber (fig. 9).

Much of the cultivated land is devoted to other crops, mostly feed crops. This applies especially to the western part of the county, partly because the sandy areas return more for corn than for wheat.

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3/ Dr. E. H. Tyner formerly with the N. Dak. Agr. Exp. Sta. prepared the soils Classification map from the "Soil Survey of Sargent County", published in 1917 by the Bureau of Chemistry and Soils. The soils were grouped into the following classes: (1) Soils suitable for cultivation; (2) Soils suitable for grass; and (3) Marginal soils suitable for cultivation only under such favorable conditions as good management, favorable topography, adequate moisture, and good prices.

Soils Classified As To Use Suitability
SARGENT COUNTY, N.D.

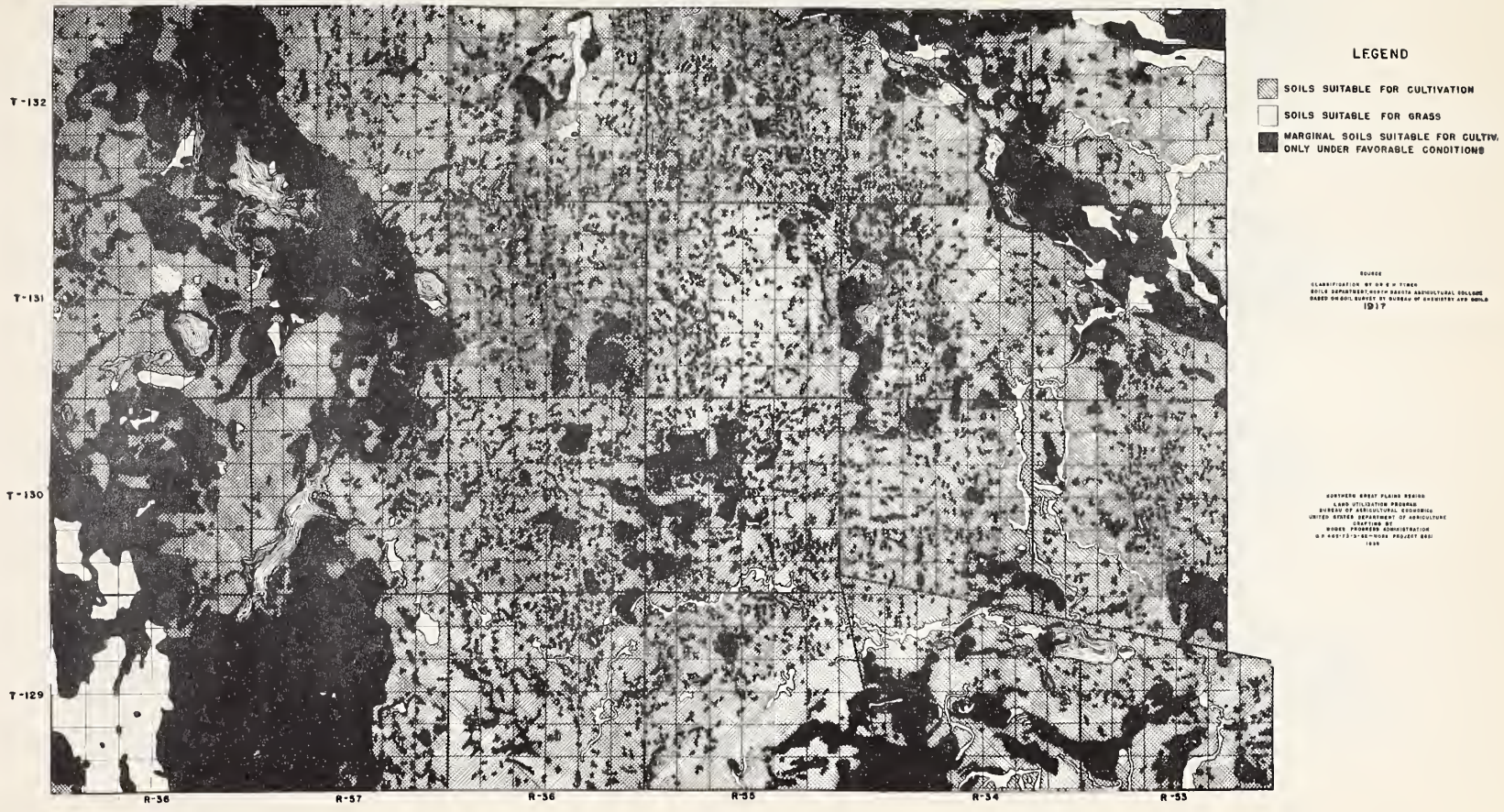


FIGURE 7

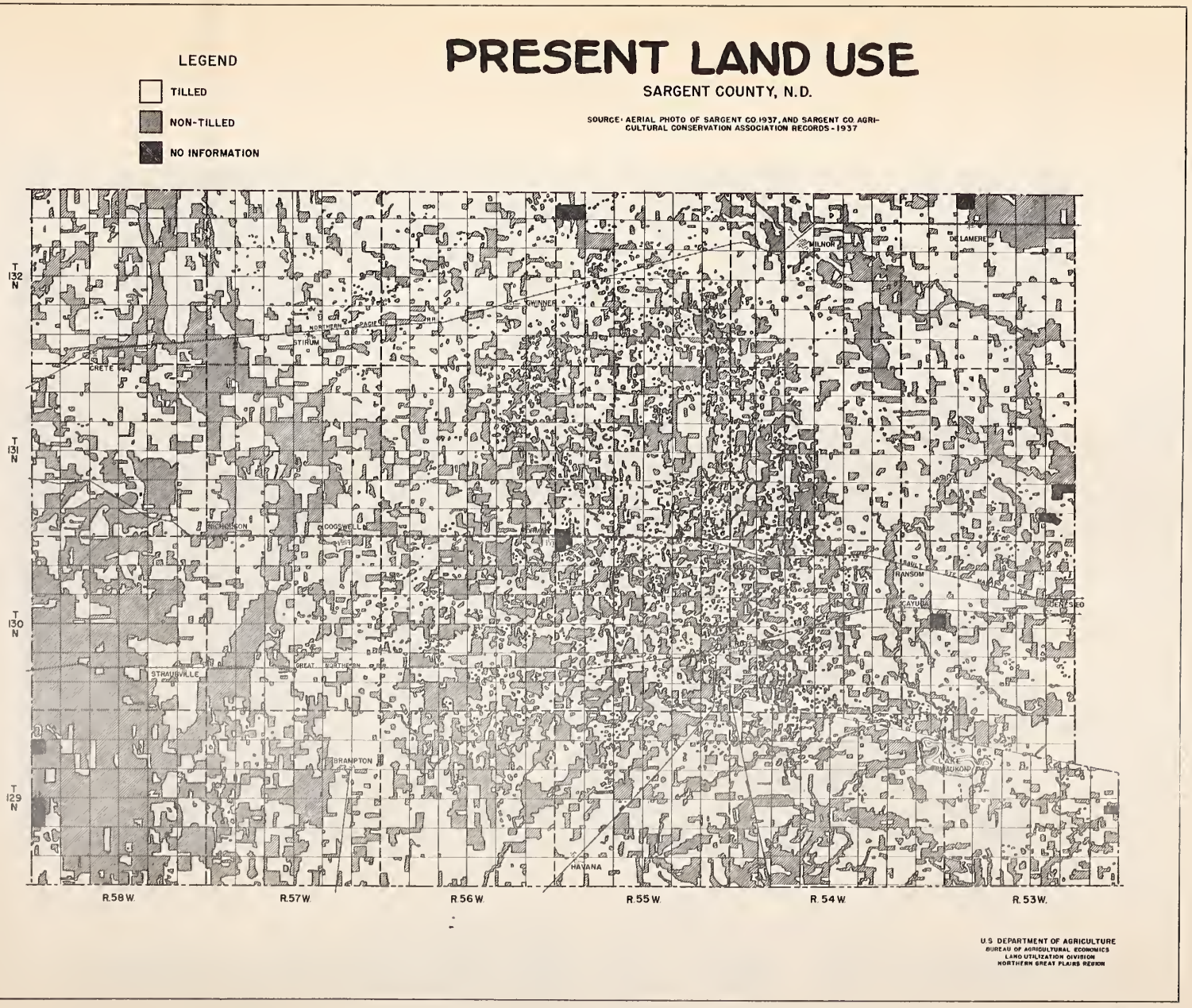
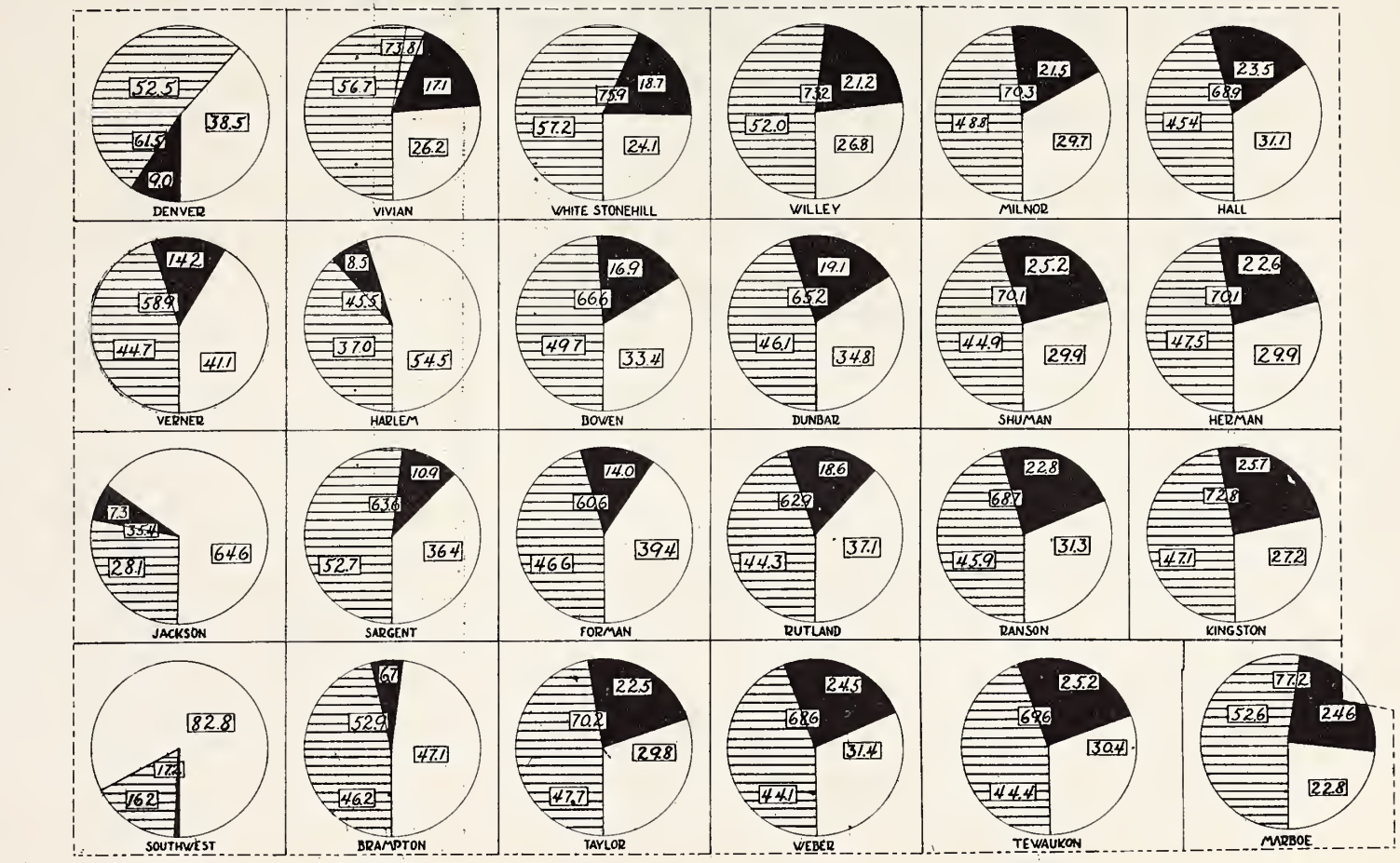

LEGEND
TILLED
NON-TILLED
NO INFORMATION
PRESENT LAND USE
SARGENT COUNTY, N.D.
SOURCE: AERIAL PHOTO OF SARGENT CO. 1937, AND SARGENT CO. AGRICULTURAL CONSERVATION ASSOCIATION RECORDS - 1937
T 132 N
T 131 N
T 130 N
T 129 N
R.58 W.
R.57 W.
R.56 W.
R.55 W.
R.54 W.
R.53 W.
MILNOR
DE LAMERE
GWINNER
NORTHERN PACIFIC R.R.
STIRUM
CRETE
RICHARDSON
COGSWELL
ENGLEVALE
RANSOM
KATUBA
ORTONVILLE
STRAUBVILLE
GREAT NORTHERN R.R.
BRAMPTON
LAKE TEWAUKON
HAVANA
U.S. DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
LAND UTILIZATION DIVISION
NORTHERN GREAT PLAINS REGION
NEG NO. 38771

FIGURE 8

PROPORTION OF LAND DEVOTED TO WHEAT, OTHER CROPS AND GRASSES IN SARGENT CO. N.D.

1937

SOURCE: SARGENT COUNTY SOIL CONSERVATION ASSOCIATION RECORDS



NONCROP LAND

LAND DEVOTED TO CROPS EXCLUDING WHEAT

LAND DEVOTED TO WHEAT

NEG. NO. 38772

FIGURE 9

SUMMARY DESCRIPTION OF TYPES-OF-FARMING AREAS

Classification of the individual farms by type is shown in figure 10. Examination of the individual type of farms in this figure provided a basis for delineating type areas as shown in figure 11. In each of the areas shown in figure 11, one or more types are found much more often than any of the other. 4/ The type map together with the map showing size of farms will be helpful to farmer planning groups in measuring the effect of their recommendations for minimum size farm unit on the present operating unit pattern of the county.

Area I. (Livestock Area)

Area I in the western part of the county includes almost one-third of all land in the county (fig. 11). It contains the largest amount of marginal land and land suitable for grass. (See figs. 7 and 11.) During times of drought this area is subject to widespread damage from wind erosion.

Of the farm units found within this area 72 percent, or 298, are livestock farms. Twelve percent of the farms in this area are general farms; 13 percent are classified as either part-time or self-sufficing units (table 1). Only 3 percent of the farms are classified as cash-grain farms.

Table 1. - Distribution of farms by type in each type-of-farming area, Sargent County, No. Dak., 1937

Type of farm	Area I: Livestock		Area II: Livestock		Area III: Livestock & general		Area IV: General 1/		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Livestock	298	72	21	70	221	42	58	22	598	48
General	51	12	1	3	209	40	137	51	398	32
Cash-grain	11	3	2	7	64	12	61	22	138	11
Part-time	30	7	2	7	14	3	10	4	58	5
Self-sufficing	22	6	4	13	14	3	3	1	43	4
Total	412	100	30	100	522	100	269	100	1,233	100

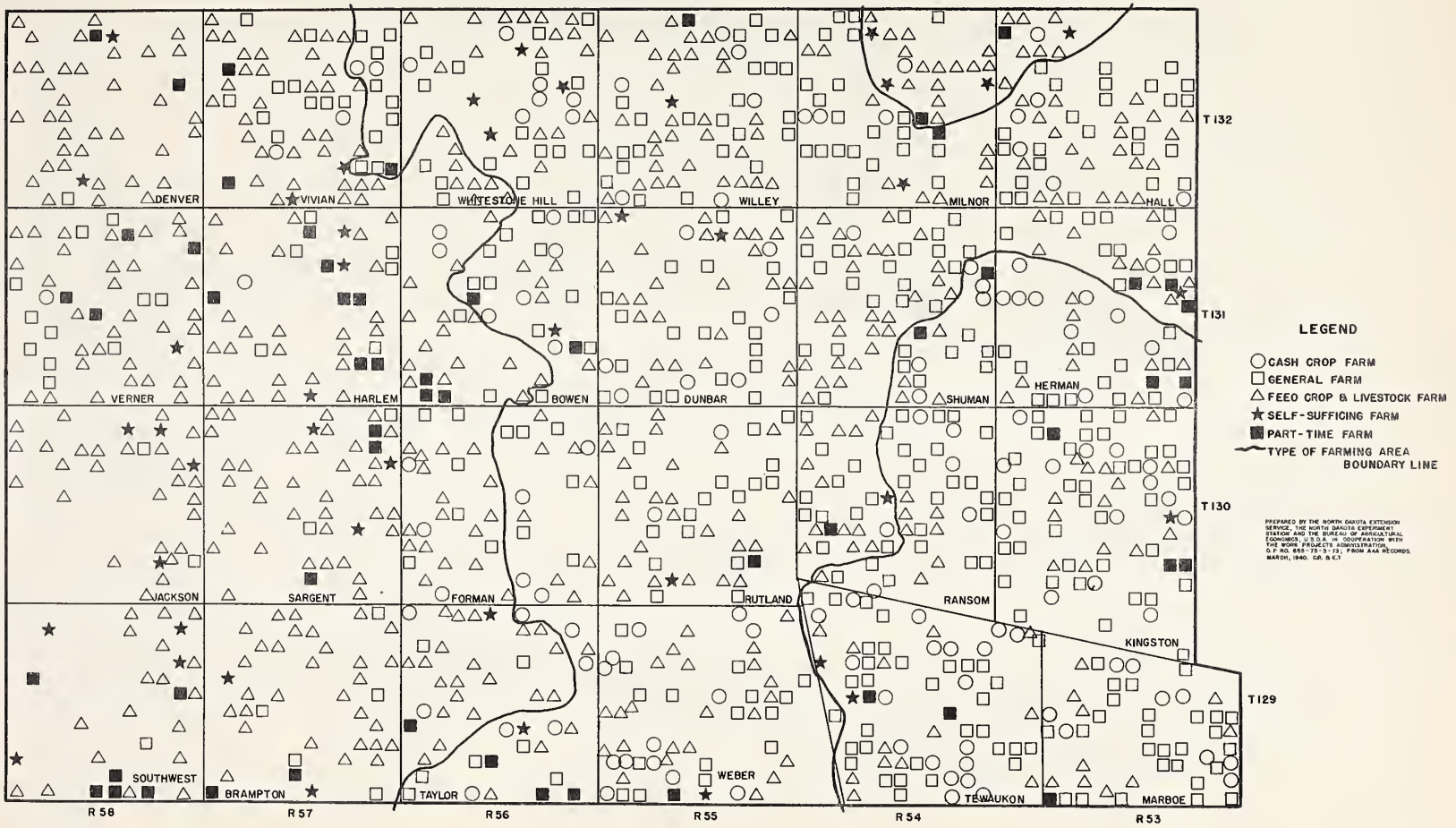
1/ Cash-grain and livestock.

Compiled from Agricultural Adjustment Administration records.

4/ For a detailed description of the methods used in delineating type of farming areas and classifying farms by type, see page 49.

TYPE OF OPERATING UNITS MAPPED IN PLACE

1233 FARMS, SARGENT COUNTY, NORTH DAKOTA
1937



U.S. DEPARTMENT OF AGRICULTURE

NEG. 38653 BUREAU OF AGRICULTURAL ECONOMICS

FIGURE 10

TYPE OF FARMING AREAS

SARGENT COUNTY, NORTH DAKOTA

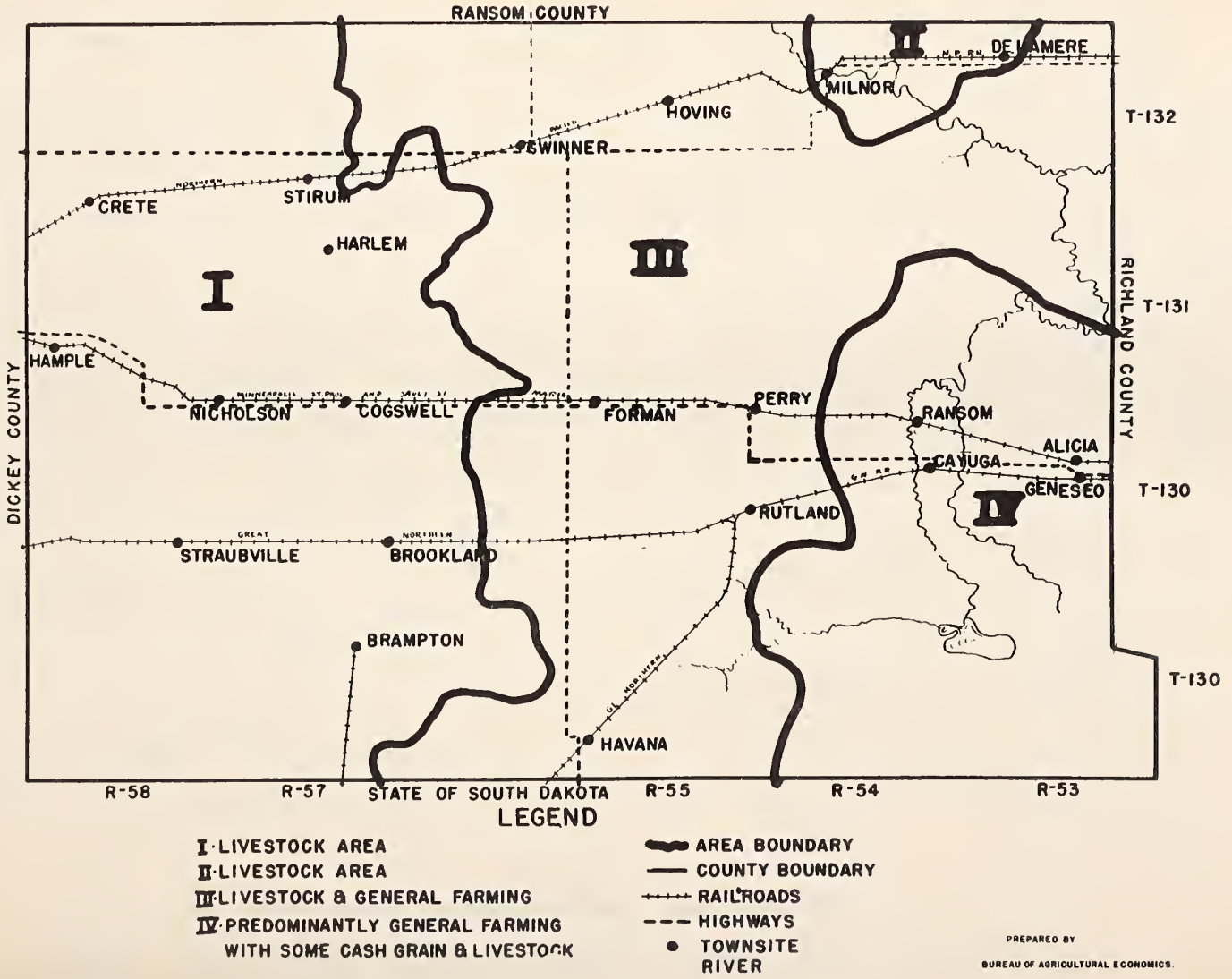


FIGURE 11

Area II. (Livestock Area)

Area II is the smallest type-of-farming area in Sargent County, including only about 18 sections of land. It is located in the northeast corner of the county. The soils are similar to those of Area I, and a large proportion is classified as marginal.

There are only 30 farms in this area - Twenty-one farms, or 70 percent, have been classified as livestock farms; 13 percent have been classified as self-sufficing units; 3 percent as general farms; and the remainder equally divided between cash-grain and part-time units (table 1).

Area III. (Livestock and General Farming)

Area III consists of that part of the county containing the largest extent of land suitable for cultivation. (See fig. 7.) However, many small tracts of marginal soils are scattered widely over the area; they represent pot-holes with poor drainage.

Livestock farms and general farms are about equal in number in Area III - 42 percent of the farms are classified as livestock farms, and 40 percent are classified as general farms. A higher percentage of farms are classified as cash-grain farms than is the case in either Area I or Area II, for 12 percent of the farms are classified as cash-grain, compared with 3 percent for Area I, and 7 percent for Area II. The remaining 6 percent consist of part-time and self-sufficing units (table 1).

Area IV. (General Farming with Cash Grain and Livestock)

In Area IV most of the land is composed of soils suitable for cultivation, similar to those found in Area III, with the exception of the Tewaukon and Marboe Townships which are bisected by a large range known as the Sisseton Hills. However, in places where rocks are few or where they have been removed, these hills are found to be rather productive.

In this area, 51 percent of the farms have been classified as general farms, compared with 40 percent in Area III and 12 percent in Area I. This would indicate that Area IV is predominantly general farming in nature. Livestock farms represent 22 percent of all farms; part-time and self-sufficing units represent 5 percent. This area has a larger percentage of cash-grain farms than any of the other three areas. Twenty-two percent are classified as cash-grain, compared with 12 percent in Area III, 7 percent in Area II and 3 percent in Area I (table 1).

GEOGRAPHY AND DISTRIBUTION OF FARMS BY SIZE

The average size of farm in Sargent County is 412 acres, but there is considerable variation from this average. Farms range in size from 80 acres to more than 1,000 acres. However, 80 percent of them have less than one section of land each. Approximately one-fourth are 240 acres or smaller, one-third are half-section farms, and nearly one-fourth are three-quarter section farms (table 2).

The approximate size and the location of the 1,233 farms in the county are shown in figure 12. In some townships, both large and small units exist. Even though the farms range widely in size in all parts of the county, it is evident that the majority of the larger farms are located in the southwestern part.

Table 2. - Distribution of farms by size in each type-of-farming area, Sargent County, No. Dak., 1937

Size (acres)	Area I Livestock		Area II Livestock		Area III Livestock & general		Area IV General 1/		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
80 - 240	101	25	11	37	113	22	74	28	299	24
241 - 400	117	28	12	40	189	36	104	39	422	34
401 - 560	76	18	4	14	136	26	49	18	365	22
561 - 720	48	12	1	3	41	8	26	10	116	9
721 - 880	30	7	1	3	20	4	12	4	63	5
881 & over	40	10	1	3	23	4	4	1	68	6
Total	412	100	30	100	522	100	269	100	1,233	100

1/ Cash-grain and livestock.

Compiled from Agricultural Adjustment Administration records.

There are 843 farms located on the predominantly good soils (table 3). These farms average 389 acres in size, with 276 acres, or 71 percent, in cropland and the remaining 113 acres, or 29 percent in native grasses. (See table 6.)

A total of 390 farms are located in the townships where soils are predominantly poor (table 3). These farms contain an average of 462 acres, of which 291 acres, or 63 percent, are devoted to cropland and the remaining 171 acres, or 37 percent, are in native grasses. (See table 6.)

SIZE OF OPERATING UNITS MAPPED IN PLACE

1233 FARMS. SARGENT COUNTY. NORTH DAKOTA
1937

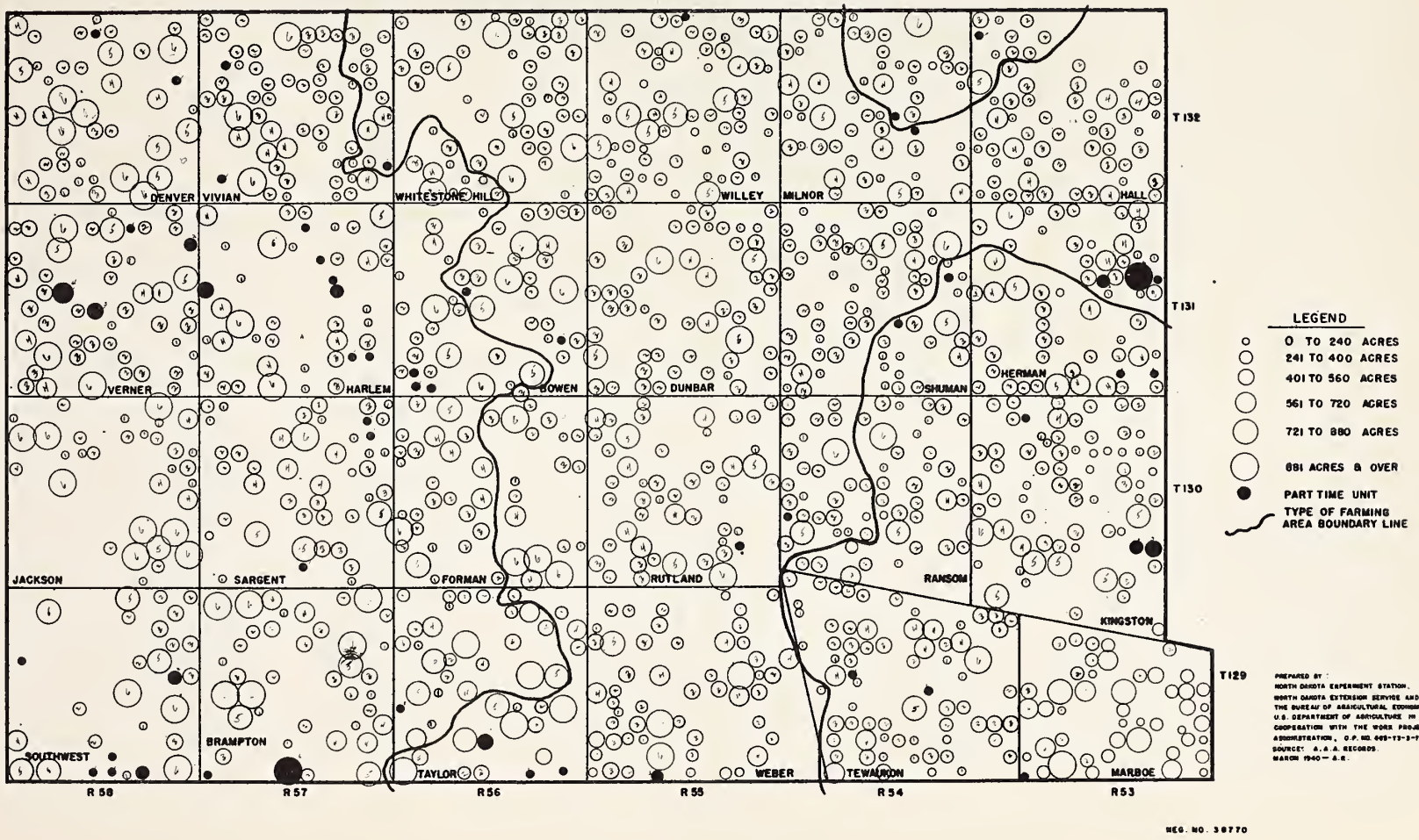


FIGURE 12

The average-sized farm in the poor soils area is 73 acres larger than the average-size farm on the good soils, but has only 15 more acres of land under cultivation.

Grassland and marginal soils are relatively more predominant in the two western tiers of townships with the exception

Table 3. - Distribution of farms by size on good soils and poor soils, Sargent County, No. Dak., 1937

Size (acres)	Good soils 1/		Poor soils 2/	
	Number	Percent	Number	Percent
80 - 240	197	23	102	26
241 - 400	322	38	100	26
401 - 560	183	22	82	21
561 - 720	69	8	47	12
721 - 880	38	5	25	6
881 & over	34	4	34	9
Total	843	100	390	100

1/ Includes all farms in Bowen, Dunbar, Forman, Fall, Kingston, Marboe, Ransom, Rutland, Shuman, Taylor, Tewaukon, Vivian, Weber, Whitestone Hill, and Willey Townships where the soils are classified as predominantly good or as soils that are definitely suitable for cultivation.

2/ Includes all farms in Brampton, Denver, Harlem, Herman, Jackson, Milnor, Sargent, Southwest, and Verner Townships where the soils are classified as predominantly poor or as soils that are suitable for cultivation only under favorable conditions like level topography, adequate rainfall, good prices, and good management.

Sargent County Soil Conservation Association records and soil classification map from Soil Survey developed by E. H. Tyner, formerly No. Dak. Agr. Sta. Fargo, No. Dak.

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of Vivian, and in Herman and Milnor Townships in the northeastern corner of the county. As a rule, the soils of these areas are lower in quality than those of the remainder of the county. Sixty-three percent of the farmland on poor soils is devoted to the production of crops, which accounts for 390 farms, or almost one-third of all of the farms in the county. It is, therefore, important to study the organization of farms on poor soils in order to observe the success or failure of farming operations on this type of soil.

Table 3 shows that 52 percent of the farms on poor soils are of 400 acres and less in size, compared with 61 percent of the farms on good soils. Twenty-six percent of the farms on poor soils, compared with 23 percent of the farms on good soils, were less than 240 acres in size. This indicates that although the production is much lower, acre for acre, on the poor soils than on the good soils, the farms are not a great deal larger on the poorer soils than on the good soils.

Poor Soil Area is Serious Problem

So that the present farm organization for the poor soils could be studied more closely, Brampton and Southwest Townships, in which poor soils predominate, were selected for closer analysis. Three-fourths of the land in farms in Brampton and Southwest Townships is composed of poor soil. 5/

On the good soils, 63 percent of the land is under cultivation compared with 50 percent on the poor soils. That 50 percent of the land on the poor soils is under cultivation is evidence that the poor soil area presents a serious problem in making farm adjustments. (See table 7.)

Of the 61 farms located in these two townships, 15 were composed predominantly of good soil and 46 farms were composed mostly of poor soils. The average size of farms was approximately the same on both soil types, being about one section in size (table 4). However, because of the higher percentage of tillage on good soils, farms averaged 73 acres more of cropland, 67 acres more of cash crops, and 55 acres more of feed crops than the farms on the poor soils. That the poor sandy soils have been badly damaged by wind erosion is evidenced by the fact that farms on poor soils averaged 49 more acres of idle land than farms on good soils.

Cattle and sheep were the principal kinds of livestock. The number of sheep on farms located on poor soil was approximately three times the number kept on the farms on the good soils, but the number of cattle was about the same. The number of hogs, probably brood sows, was the same for the farms on both soil types.

5/ Includes all land operated by 61 farmers in Brampton and Southwest Townships in 1937. The area not accounted for in these townships is operated by farmers living in adjoining townships, or is not under lease.

Table 4. - Average land use on farms of good soils and poor soils, Southwest and Brampton Townships, Sargent County, No. Dak., 193

Land use	Good soils		Poor soils	
	Acres	Percent	Acres	Percent
Cash crops 1/	109	18	42	7
Feed crops 2/	208	34	153	25
Idle and Fallow	64	11	113	18
Total cultivated	381	63	308	50
Total uncultivated	226	37	306	50
Total acres	607	100	614	100

1/ Wheat and rye.
2/ Corn, oats, barley, millet, tame hay, tame pasture, and other.

BUDGET APPROACH TO FARM-MANAGEMENT PROBLEMS IN SOUTHWESTERN SARGENT COUNTY

Because of the instability of the present type of agriculture in the sandy area in the southwestern part of the county, and the financial hardships suffered by the farmers who are still in the area, planning groups in Sargent County first attacked the problem of developing budgets of farm organizations suitable for this locality.

The objectives of the budget approach is to determine the sizes and types of operating units suitable for the problem area and other areas of the county. The determination of satisfactory types and sizes of operating units is the first step toward appraising the adjustments required for the area.

To obtain basic data for the development of farm budgets, 22 farm schedules were taken by representatives of the Bureau of Agricultural Economics in June 1939. These schedules were obtained from farmers operating near the boundary area between the poor and good soils in Sargent, Brampton, Forman, and Taylor Townships. Eleven of these schedules were obtained from farmers on the good soil area, 6/ and the remainder came from farmers on the poor soil area. 7/ Very little of the land farmed by these operators was badly eroded, hence the schedule information was not representative of the problem area of the county which had been severely damaged from soil blowing. But the information was representative of the area from which the schedules were obtained.

6/ Includes those soils suitable for cultivation (fig. 7).
7/ Includes those soils suitable for grass and marginal soils suitable for cultivation (fig. 7).

Two farmer planning groups each held three meetings during the fall of 1939 to develop budgets for the areas of poor and good soil. In the development of the budgets, the farmers considered information from the schedules, farm organization data compiled by the Bureau of Agricultural Economics representatives from the Sargent County agricultural conservation program records in June 1938, price data from the Department of Agricultural Economics, of the North Dakota Agricultural College, and yield data from the Agricultural Marketing Service. In addition, most of the charts included in this report were used.

Farmers Recommend 320-acre Unit for Good Soil

Three meetings were held by the farmers in the good soil area adjacent to the poor soils in the southwest part of the county. The Sargent County Agricultural Agent acted as chairman with the representative of the Bureau of Agricultural Economics acting as a technical advisor. Three farm budgets were developed, consisting of a 320-acre tractor-operated unit, a 320-acre horse-operated unit, and a 480-acre tractor-operated unit. (See tables 15, 16 and 17 for details regarding budgets for the good or heavy soil area.) The farmers in good soil area choose the 320-acre unit, either the horse or tractor operated, as the minimum economic unit.

Such a recommendation warrants serious consideration, for 197 farms on the good soils are of 240 acres or less. (See table 3.) This recommendation immediately indicts 197 farms as being too small to provide an adequate living. This represents 23 percent of the farms on good soils, or 16 percent of all the farms in the county. The question of whether or not it is possible to make adjustment to overcome this handicap in view of so many farms being smaller than 240 acres, is important. Apparently further study and consideration will be necessary by farm planning groups.

Three budgets for the poor soil area have been developed by farmer planning groups through the same procedure used for the three farm budgets for the good soils. These budgets are for farms on the eastern edge of the sandy soil where the soils are not so poor as those in some of the places which have been subjected to severe wind erosion.

The three budgets developed for the poor soil area represent budgets for the 320-acre horse-operated unit, the 480-acre tractor-operated unit, and the 640-acre tractor-operated unit. (See tables 18, 19 and 20 for details regarding budgets for poor or sandy soils.)

After the farmers of Sargent County had studied the farm organization, expected incomes, and estimated expenses for the 320-acre unit and for the 480-acre unit for the poor soils, they were hesitant in definitely "pegging" the minimum economic unit. They felt that the 320-acre unit, although it appeared to yield an

adequate income, was probably operating very close to the margin, and, therefore, they recommended a farm somewhere between 320 and 480 acres.

Recommendations Would Dispossess Some Farm Families

There are 202 farms of 400 acres and less on poor soils, representing 52 percent of all farms on the poor soils or 16 percent of all farms in the county. (See table 3.) Thus, the planning groups in selecting a unit between 320 acres or 480 acres in size actually indicted 202 farms, or 52 percent of the farms on poor soils, as not being large enough to provide a decent living.

The possibility of adopting these recommendations without serious repercussions may be questionable, because if such recommendations are followed, considerable shifting of farm families will be necessary because there is not enough land to go around if a unit between 320 and 480 acres is selected as a minimum-sized unit. If such recommendations are adopted, it will be necessary to provide for these surplus farmers elsewhere, in either industry or agriculture. All the good land in Sargent County is already in farms, so it would be difficult to find suitable locations for all farmers now on small units. The alternative of providing for any appreciable number in industry in the city is doubtful in view of widespread industrial unemployment. The problem of providing a satisfactory place for these surplus farmers to go must be considered by the local and national planning group.

Change of Organization is a Possibility

Before final approval is given these recommendations, local planning groups should reconsider the possibilities of increasing the farm income on the smaller-sized units. Such an alternative might include the use of more and better laying hens, an increase in the number of cows, or the replacement of present cows with cows of higher production. Another alternative may be to accept a lower income for labor and management than the $682 received in the 320-acre horse-operated unit, or the $781 received in the 480-acre tractor-operated unit, which would mean that it may be possible for the planning groups to be satisfied with a smaller unit. The possibility of developing a farm organization on 240 acres that might yield a satisfactory living should not be overlooked. A recommendation based on this possibility would displace fewer farmers, because only 26 percent of the farms on poor soils are 240 acres or less in size.

Another problem faced by planning groups is to determine the best uses for the "blow areas" in the southwestern part of the county. The question of whether a ranch economy or livestock farming should be encouraged there is yet to be answered. After the farm planning groups have decided on the best type of farming for this area, they still face the question of just what size and type of farm should be set up as a minimum-sized unit.

SUPPLEMENTARY TABLES

Table 5.- Distribution of farms by size, Sargent County, No. Dak., 1900, 1910, 1920, 1925, 1930, and 1935

Acres	1900		1910		1920		1925		1930		1935	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
99 & less	25	3	21	2	17	1	43	3	41	3	78	5
100 - 174	259	28	222	19	244	18	243	18	227	17	354	24
175 - 259	54	6	112	9	144	11	178	13	172	12	153	10
260 - 499	396	43	569	48	686	52	709	53	685	51	669	46
500 - 999	156	17	228	19	205	16	167	12	214	16	190	13
1000 & over	34	3	39	3	25	2	19	1	16	1	23	2
Total farms	924	100	1191	100	1321	100	1359	100	1355	100	1467	100

Bureau of the Census, Census of the United States: 1900, 1910, 1920, and 1930, and United States Census of Agriculture, 1925 and 1935.

Table 6. - Number, land use and average size of farms on good soils and poor soils, Sargent County, No. Dak., 1937

Item	Good Soils 1/	Poor Soils 2/	County
Number of farms	843	390	1,233
Total acres in farms	327,806	180,180	507,986
Acres not tilled	94,947	67,141	162,088
Percentage tilled	71	63	68
Average size of farms	389	462	412
Acres of cropland per farm	276	291	280

1/ Includes all farms in Berlin, Dunbar, Forman, Hall, Kingston, Marboe, Ransom, Rutland, Shuman, Taylor, Tewaukon, Vivian, Weber, Whitestone Hill, and Willey Townships where the soils are classified as predominantly good or soils that are definitely suitable for cultivation.
2/ Includes all farms in Brampton, Denver, Harlem, Herman, Jackson, Milnor, Sargent, Southwest, and Verner Townships where the soils are classified as predominantly poor or soils that are suitable for cultivation only under such favorable conditions as level topography, adequate rainfall, good price and good management.

Sargent County Soil Conservation Association records and soil classification map from Soil Survey developed by E. H. Tyner, No. Dak. Agr. Exp. Sta., Fargo, No. Dak.

Table 7. - Comparison of land use on good soils and poor soils, Southwest and Brampton Townships, Sargent County, No. Dak., 1937

Land use	Good Soils		Poor Soils	
	Acres	Percent	Acres	Percent
Cash Crops 1/	1,639	18	1,995	7
Feed crops 2/	3,118	34	7,061	25
Idle and fallow	964	11	5,139	18
Total cultivated	5,721	63	14,195	50
Total uncultivated	3,388	37	14,083	50
Total acres	9,109	100	28,278	100

1/ Wheat and rye.
2/ Corn, oats, barley, millet, tame hay, tame pasture and others.

Sargent County Conservation Association records and soil classification map from Soil Survey developed by E. H. Tyner, No. Dak. Agr. Exp. Sta. Fargo No. Dak.

Table 8. - Yields per harvested acre of principal crops, Sargent County, No. Dak., 1911-1938

Year	Wheat	Rye	Flax	Corn	Oats	Barley	Potatoes	Hay
	Bu.	Bu.	Bu.	Bu.	Bu.	Bu.	Bu.	T.
1911	3.1	15.0	8.4	30.0	11.2	8.6	91.0	.88
1912	18.0	15.0	11.7	16.2	44.2	29.5	103.0	1.55
1913	12.2	12.7	8.5	28.8	30.0	22.9	102.0	1.17
1914	11.3	20.0	9.8	22.8	23.3	17.8	98.0	1.62
1915	18.0	17.0	14.0	27.5	40.0	32.0	112.0	1.50
1916	5.0	12.0	7.5	30.0	12.0	12.0	68.0	1.53
1917	14.0	15.0	7.5	22.0	28.0	20.0	65.0	1.00
1918	22.5	13.0	11.0	30.0	40.0	31.0	75.0	1.40
1911-18 Av.	13.0	15.0	9.8	25.9	28.6	21.7	89.2	1.33
1919	7.3	9.0	8.0	31.1	21.0	14.0	55.0	1.35
1920	8.3	9.0	10.2	28.0	31.0	21.5	103.0	1.42
1921	8.6	11.0	6.8	34.0	19.0	19.5	73.0	1.40
1922	9.9	14.0	11.0	26.6	32.0	20.0	63.0	1.20
1923	7.8	10.0	7.9	33.9	27.0	16.5	87.0	1.27
1924	14.6	15.0	8.2	20.0	32.5	21.5	85.0	1.15
1925	12.7	10.5	7.2	20.0	32.0	24.0	69.0	1.45
1926	4.3	6.5	4.5	17.0	9.0	8.5	58.0	.75
1927	13.5	17.0	6.2	20.0	14.0	24.0	104.0	1.65
1928	13.0	9.0	6.9	21.0	30.5	24.5	83.0	1.35
1919-28 Av.	10.0	11.1	7.7	25.2	24.8	19.4	78.0	1.30
1929	10.4	11.5	5.1	14.5	21.5	14.0	56.0	.95
1930	13.4	15.0	7.1	15.0	28.0	20.5	62.0	.90
1931	11.7	12.4	5.3	14.0	22.0	17.5	60.0	.90
1932	12.0	10.5	4.0	16.0	24.0	14.5	58.0	.95
1933	3.9	4.5	1.4	12.5	9.0	5.5	33.0	.40
1934	2.9	0.0	0.0	3.4	9.2	10.1	20.0	.49
1935	8.6	20.4	5.6	14.0	20.1	14.0	75.0	1.16
1936	3.8	3.4	0.0	3.0	5.0	4.2	32.0	.44
1937	7.6	15.1	3.5	24.5	23.0	12.6	82.0	1.30
1938	14.2	18.0	5.1	19.0	32.5	18.0	68.0	1.13
1929-38 Av.	8.8	11.1	3.7	13.6	19.4	13.0	54.6	.86
1911-38 Av.	10.4	12.2	6.9	21.2	24.0	17.8	72.9	1.15

1911-1918, Fuller, O.M. and Willard, Rex E., Type of Farming Areas in No. Dak., Bulletin 212, Exp. Sta., Fargo, No. Dak.; 1919-1938, Division of Crop and Livestock Estimates, Bureau of Agricultural Economics, Crop Statistics.

Table 9. - Number of farms, size of farms, tenancy of farms, land in farms, population, acres of principal crops, and number of livestock, 1890, 1900, 1910, 1920, 1925, 1930, 1935 and 1939
Sargent County, No. Dak.

Item		1890	1900	1910	1920	1925	1930	1935	1939
Number of farms		935	924	1,191	1,321	1,359	1,355	1,467	---
Average acreage per farm		297	389	407	374	349	365	341	---
Farms operated by tenant		38	102	297	425	533	634	691	---
Percent of tenants		4	11	25	32	39	47	47	---
Land in farms	acres	277,917	359,779	484,809	494,179	474,766	494,790	500,099	547,747
Total population	number	5,076	6,039	9,202	9,655	---	9,298	---	---
Wheat	acres	83,088	106,054	135,953	172,705	86,812	102,577	66,000	80,000
Rye	do.	34	1,734	265	13,352	12,662	6,968	16,000	42,000
Flax	do.	2,654	15,140	27,773	5,534	27,505	10,206	15,000	9,000
Barley	do.	2,190	7,080	23,220	23,802	35,623	55,593	42,000	21,000
Corn	do.	111	4,230	7,628	12,587	58,534	50,790	36,000	37,000
Oats	do.	13,801	13,763	25,475	36,105	49,421	36,321	43,000	41,000
Horses	number	3,849	7,627	11,937	13,356	11,610	10,026	7,539	6,500
Cattle	do.	7,838	18,234	20,665	29,092	25,804	26,342	17,776	21,000
Hogs	do.	2,805	7,424	10,904	21,013	31,869	23,614	5,264	13,500
Sheep	do.	1,404	9,102	2,129	3,069	3,633	12,077	12,353	17,000

Bureau of the Census, Census of the United States: 1890, 1900, 1910, 1920, 1930 and United States Census of Agriculture, 1925, 1935, the crop acreages for 1935 and all 1939 figures from Agricultural Marketing Service.

Table 10. - Average yearly prices per bushel of principal crops, No. Dak., 1910-1939

Year	Wheat	Flax	Oats	Barley	Rye	Potatoes
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1910	.97	2.11	.38	.50	.62	.68
1911	.88	2.16	.38	.74	.72	.89
1912	.87	1.72	.40	.66	.67	.66
1913	.74	1.18	.28	.40	.48	.40
1914	.86	1.35	.34	.41	.59	.59
1915	1.14	1.62	.38	.50	.92	.46
1916	1.18	2.02	.36	.61	.93	.81
1917	1.88	2.86	.56	.96	1.57	1.66
1918	2.03	3.60	.73	1.04	1.77	1.07
1919	2.25	4.10	.64	.92	1.33	1.14
1920	2.26	3.50	.71	1.02	1.54	2.44
1921	1.13	1.52	.25	.37	.94	.86
1922	1.02	2.09	.26	.37	.66	.70
1923	.90	2.34	.29	.41	.53	.44
1924	1.12	2.18	.37	.55	.70	.54
1925	1.42	2.44	.33	.60	.91	.88
1926	1.37	2.06	.30	.45	.68	1.76
1927	1.20	1.94	.37	.58	.82	1.06
1928	1.03	1.95	.38	.60	.87	.51
1929	.09	2.46	.34	.44	.78	.69
1930	.73	2.12	.26	.34	.43	1.20
1931	.43	1.22	.16	.21	.20	.70
1932	.40	.95	.12	.19	.20	.30
1933	.55	1.30	.18	.24	.38	.45
1934	.83	1.62	.36	.48	.53	.60
1935	.87	1.48	.33	.43	.38	.52
1936	.98	1.66	.27	.44	.50	.80
1937	1.12	1.85	.34	.54	.74	.94
1938	.66	1.64	.19	.33	.36	.42
1939	.60	1.54	.21	.29	.29	.51
Average	1.08	2.02	.35	.52	.73	.82
Average 1/	.92	1.79	.30	.45	.61	.71

1/ 1910-39 average, war-time prices for the years 1917, 1918, 1919 and 1920 excluded.

Fuller, O.M. and Willard, Rex E., Prices of North Dakota Farm Products, Bulletin 232, December, 1929, and Brown, Willard O. and Miller, Cap E., Supplement to Bulletin 232, November, 1937 (Mimeographed); 1937, 1938 and 1939 figures furnished by Brown, Willard O. and Ettesvold, W. S.; North Dakota Agricultural Experiment Station, Fargo, North Dakota.

Table 11. - Average yearly prices of livestock and livestock products, No. Dak., 1910-1939

Year	Cattle per cwt.	Hogs per cwt.	Sheep per cwt.	Lambs per cwt.	Wool per lb.	Butter-fat per lb.	Chick-ens per lb.	Eggs per doz.
	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.	Dol.
1910	4.10	7.80	4.80	5.80	.21	.27	.10	.22
1911	3.80	5.80	4.00	5.10	.16	.24	.09	.20
1912	4.50	6.40	4.20	5.40	.16	.26	.10	.22
1913	5.40	7.10	4.80	6.00	.16	.27	.11	.21
1914	5.80	6.30	4.80	6.20	.16	.26	.11	.21
1915	5.50	6.00	5.10	6.60	.20	.26	.10	.21
1916	6.00	7.80	6.00	7.60	.26	.30	.11	.24
1917	7.40	13.40	8.60	11.00	.43	.38	.14	.33
1918	8.40	15.40	10.20	12.80	.56	.44	.16	.36
1919	8.60	15.50	[illegible].20	11.90	.48	.52	.17	.40
1920	7.10	12.20	7.70	10.80	.32	.56	.17	.44
1921	4.80	7.00	4.20	6.50	.17	.35	.14	.30
1922	4.80	7.40	5.40	8.60	.24	.32	.14	.25
1923	5.00	6.20	6.00	8.60	.36	.42	.14	.26
1924	4.80	6.40	6.70	10.40	.34	.39	.14	.25
1925	5.10	10.00	7.40	11.80	.36	.40	.14	.30
1926	5.70	11.00	7.20	11.60	.32	.41	.16	.28
1927	6.20	8.80	7.00	11.10	.30	.43	.16	.26
1928	8.20	7.90	7.20	11.50	.35	.45	.16	.27
1929	8.30	8.70	7.20	11.50	.30	.44	.16	.27
1930	6.60	7.30	4.70	7.80	.20	.32	.13	.22
1931	4.60	5.00	2.80	5.60	.12	.24	.11	.15
1932	3.30	2.70	2.10	4.10	.08	.16	.08	.13
1933	2.93	2.82	2.22	4.50	.17	.17	.06	.12
1934	3.08	3.34	2.53	5.57	.20	.22	.08	.16
1935	5.65	7.30	3.40	6.83	.18	.27	.12	.22
1936	5.44	8.36	3.81	7.85	.24	.31	.12	.21
1937	6.60	8.92	4.00	8.48	.28	.32	.12	.20
1938	5.93	7.07	3.33	6.70	.18	.25	.12	.18
1939	6.30	5.80	3.40	7.30	.20	.23	.10	.14
Average	5.66	7.91	5.33	8.22	.26	.33	.12	.24
Average 1/	5.32	6.96	4.78	7.6[illegible]	.23	.31	.12	.22

1/ 1910-39 average, war-time prices for the years 1917, 1918, 1919 and 1920 excluded.

Fuller, O.M. and Willard, Rex E., Prices for North Dakota Farm Products, Bulletin 232, December, 1928, and Brown, Willard O. and Miller, Cap E., Supplement to Bulletin 232, November, 1937 (Mimeographed); 1937, 1938 and 1939 figures furnished by Brown, Willard O. and Ettesvold, W. S.; No. Dak. Agr. Exp. Sta., Fargo, No. Dak.

Table 12. - Type of farms by townships, Sargent County, No. Dak., 1937

Township	Cash Crop		Livestock		General		Self-Sufficing		Part-time		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Bowen	7	15	20	43	14	30	1	2	5	10	47	100
Brampton			30	77	5	13	2	5	2	5	39	100
Denver			36	88	1	2	2	5	2	5	41	100
Dunbar	7	13	24	45	20	38	2	4			53	100
Forman	7	16	25	57	12	27					44	100
Gall	6	9	28	46	25	41	1	2	1	2	61	100
Harlem	1	2	25	60	6	14	3	7	7	17	42	100
Herman	12	20	19	32	22	37	1	2	5	9	59	100
Jackson			26	81	2	6	4	13			32	100
Kingston	14	20	14	20	38	54	1	2	3	4	70	100
Marboo	9	19	10	21	27	58			1	2	47	100
Milnor	4	7	23	42	22	40	4	7	2	4	55	100
Ransom	6	10	20	33	32	53	1	2	1	2	60	100
Rutland	2	4	26	54	18	38	1	2	1	2	48	100
Sargent			36	82	2	4	3	7	3	7	44	100
Shuman	6	9	32	49	26	39			2	3	66	100
Southwest			18	62	1	3	4	14	6	21	29	100
Taylor	8	18	24	53	7	16	2	4	4	9	45	100
Tewaukon	19	27	13	19	33	48	2	3	2	3	69	100
Verner	1	2	32	65	11	23	1	2	4	8	49	100
Vivian	4	6	34	55	19	31	2	3	3	5	62	100
Weber	13	24	23	43	16	29	1	2	1	2	54	100
Whitestone Hill	7	13	25	47	17	32	4	8			53	100
Willey	6	9	34	53	22	34	1	2	1	2	64	100
County	139	11	597	48	398	32	43	4	56	5	1,233	100

Compiled from Agricultural Adjustment Administration records.

Table 13. - Size of farms by townships, Sargent County, No. Dak., 1937

Township	0-240 Acres		241-400 Acres		401-560 Acres		561-720 Acres		721-800 Acres		881-over Acres		Total	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Bowen	11	23	15	32	11	23	2	4	3	7	5	11	47	100
Brampton	8	20	9	23	7	18	5	13	3	8	7	18	39	100
Denver	10	24	10	24	4	10	6	15	5	12	6	15	41	100
Dunbar	7	13	20	38	19	36	3	5	2	4	2	4	53	100
Forman	7	16	15	34	9	20	6	14	2	5	5	11	44	100
Fall	16	26	23	38	15	24	6	10	1	2			61	100
Harlem	15	35	10	24	7	17	6	14	1	3	3	7	42	100
Herman	14	24	16	27	16	27	9	16	2	3	2	3	59	100
Jackson	10	31	8	25	2	6	3	10	1	3	8	25	32	100
Kingston	21	30	29	41	10	14	4	6	5	7	1	2	70	100
Marboe	10	21	21	45	7	15	5	11	3	6	1	2	47	100
Milnor	18	33	16	29	12	22	6	11	2	3	1	2	55	100
Ransom	14	24	28	47	12	20	2	3	2	3	2	3	60	100
Rutland	8	17	18	37	11	23	7	15	3	6	1	2	48	100
Sargent	15	34	7	16	13	30	5	11	3	7	1	2	44	100
Shuman	24	36	21	32	15	23	3	4	2	3	1	2	66	100
Southwest	6	21	9	31	5	17	1	4	5	17	3	10	29	100
Taylor	8	18	12	27	10	22	5	11	5	11	5	11	45	100
Tewaukon	20	29	25	36	14	21	8	12	1	1	1	1	69	100
Verner	6	12	15	31	16	33	6	12	3	6	3	6	49	100
Vivian	12	19	29	47	11	18	7	11			3	5	62	100
Weber	8	15	21	39	15	28	6	11	1	2	3	5	54	100
Whitestone Hill	12	23	20	38	14	26	1	2	2	4	4	7	53	100
Willey	19	30	25	39	10	16	4	6	6	9			64	100
County	299	24	422	34	265	22	116	9	63	5	68	6	1,233	100

Compiled from Agricultural Adjustment Administration records.

Table 14. - Monthly, annual and growing season precipitation, Forman, Sargent County, No. Dak., 1892-1939

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	Growing Season 1/
						Inches								
1892	0.55	0.44	1.06	2.85	4.00	4.86	4.50	2.63	0.44	0.36	0.91	0.70	23.30	13.36
1893	0.57	1.03	1.87	3.90	0.95	3.49	2.20	3.26	0.33	0.76	0.23	0.35	18.94	6.64
1894	0.58	0.33	1.88	7.48	0.87	2.92	0.59	2.29	0.19	1.57	0.46	0.19	19.35	4.38
1895	0.55	0.34	T	1.33	2.58	4.46	2.33	1.65	0.77	0.02	1.80	0.04	15.87	9.37
1896	0.48	0.38	2.11	5.32	2.72	3.31	1.75	0.89	1.12	1.93	1.07		21.09	7.78
1897	2.04	0.79	0.99	1.39	0.35	5.56	3.48	2.09	0.25	2.19	0.04	0.25	19.42	9.39
1898		0.17	1.28	1.19	3.31	1.02	3.96	2.37	1.59	1.53	0.45	0.87	17.74	8.29
1899	0.78	0.16	0.36	0.54	4.44	3.12	1.81	6.25	0.31	0.67	0.44	T	18.88	9.37
1900	0.35	0.11	2.07	2.28	0.41	0.59	2.16	9.48	3.20	1.69	0.20	0.30	22.84	3.16
1901	0.10	0.50	0.22	0.51	0.66	5.56	4.37	1.37	5.66	3.22	0.37	1.20	23.74	10.59
1902	0.13	0.37	2.62	1.75	4.04	3.16	1.32	4.46	0.58	1.61	0.37	0.45	20.86	8.52
1903	0.75	0.71	0.32	2.22	2.95	2.99	5.72	4.51	2.30	0.90	0.05	0.10	23.52	11.66
1904	0.21	0.41	0.78	2.59	3.03	5.93	1.39	0.75	4.56	2.41	T	0.30	22.36	10.35
1905	T	0.60	0.88	1.97	5.10	3.44	3.45	6.45	1.34	1.12	1.17	T	25.52	11.99
1906	0.50	0.17	0.40	2.52	7.16	3.92	4.18	2.45	3.19	1.00	0.85	0.80	27.14	15.26
1907	1.40	0.30	0.22	0.30	1.54	3.21	2.00	1.00	1.57	1.78	0.10	0.48	13.90	6.75
1908	0.40	0.70	1.00	1.05	4.00	1.38	2.46	3.01	1.57	2.41	0.20	0.90	19.08	7.84
1909	0.10	0.60	0.10	0.50	5.52	2.46	4.55	0.95	1.14	1.74	0.50	1.53	19.69	12.53
1910	0.50	0.90	0.66	1.38	0.64	3.14	1.90	1.15	2.53	0.57	0.20	0.55	14.12	5.68
1911	0.45	T	0.10	2.45	2.37	3.44	2.42	2.70	3.45	1.01	1.22	1.10	20.71	8.23
1912	0.20	0.10	0.40	2.82	4.36	2.78	4.81	2.63	2.14	0.03	0.10	0.08	20.45	11.95
1913	0.53	0.20	1.52	0.60	3.27	3.36	2.45	2.57	1.58	2.23	0.02	0.28	18.61	9.08
1914	0.22	0.23	1.66	3.10	2.24	9.67	2.23	0.75	2.01	1.13	0.59	0.70	24.53	14.14
1915	1.25	3.00	0.10	1.75	3.43	4.52	0.88	2.34	2.59	3.47	0.65	0.70	24.68	8.83
1916	1.62	0.10	1.15	3.05	5.16	6.78	10.10	4.09	2.59	0.05	0.07	0.75	35.51	22.04
1917	0.34	0.40	0.30	3.08	0.20	2.09	1.30	0.70	3.79	0.50	0.10	0.30	13.10	3.59
1918	0.08	0.10	0.80	1.82	4.39	2.31	2.19	2.97	0.07	0.48	2.05	1.75	19.01	8.89
1919	0.10	1.65	0.48	1.70	3.86	1.62	4.22	0.06	0.06	1.23	1.51	0.43	16.92	9.70

Continued

Table 14. - Monthly, annual and growing season precipitation, Forman, Sargent County, No. Dak., 1892-1939. - Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	Growing Season 1/
						Inches								
1920 2/	0.65	0.23	0.42	1.48	2.54	3.45	2.63	0.74	3.19	0.81	0.42	0.20	16.76	8.62
1921	1.19	3.88	0.54	0.80	0.20	2.04	5.54	2.42	4.59	0.55	0.44	0.49	22.78	7.78
1922	0.72	1.74	1.14	2.20	5.69	2.97	2.72	0.85	1.30	0.70	2.62	0.54	23.19	11.38
1923	1.36	0.40	0.20	2.43	2.20	5.49	3.88	2.60	1.43	0.40	0.63	0.16	21.18	11.57
1924		0.50	0.59	4.12	0.70	2.15	1.67	3.51	3.79	1.29		0.32	18.64	4.52
1925	0.40	0.20	0.20	2.72	1.42	8.44	1.46	1.55	2.93	0.33	1.07	0.62	21.34	11.32
1926	0.32	1.02	0.10	0.23	2.14	1.10	1.76	5.11	2.96	3.76	0.70	0.80	20.00	5.00
1927	0.68	0.60	1.43	2.52	6.84	3.24	3.43	2.18	2.64	0.98	0.30	1.25	26.09	13.51
1928	0.02	0.26	0.38	1.64	0.86	4.14	3.28	7.21	1.24	1.62	0.74	0.49	21.88	8.28
1929	0.92	0.40	0.46	1.53	2.08	0.98	1.17	0.96	1.78	3.69	0.20	0.90	15.07	4.23
1930	0.22	0.99	0.04	2.00	3.46	1.02	2.63	1.73	1.21	2.21	1.78	0.09	16.38	7.11
1931	0.13	0.87	1.37	1.65	2.13	6.25	1.49	1.45	0.67	2.18	0.72	0.15	19.06	9.87
1932	0.18	T	0.35	2.32	4.16	2.54	1.84	4.46	1.02	1.45	0.42	0.09	18.93	8.64
1933	0.25	0.07	0.36	1.64	2.04	2.69	2.49	1.39	0.58	T	0.39	1.06	21.96	7.22
1934	0.05	T	0.31	0.64	0.40	2.53	1.78	1.35	2.22	1.92	0.56	0.20	11.96	4.71
1935	0.25	0.35	2.41	3.85	1.49	4.65	2.70	3.95	0.17	0.06	0.34	0.87	21.09	8.84
1936	0.29	0.53	0.60	1.18	1.15	0.93	0.51	0.45	2.03	0.15	0.64	0.61	9.06	2.59
1937	1.18	0.66	0.92	5.53	2.32	3.59	4.24	3.94	0.94	0.07	0.14	0.51	24.04	10.15
1938	0.40	0.73	0.73	2.69	2.89	3.55	3.94	0.56	1.54	0.06	0.70	0.25	18.04	10.38
1939	1.05	0.52	0.24	1.26	1.29	9.53	2.24	1.14	1.38	1.42	T	0.24	20.31	13.06
Average	0.52	0.60	0.79	2.17	2.70	3.59	2.84	2.57	1.84	1.28	0.59	0.52	19.99	9.13

1/ Total for May, June and July.
2/ Records from Ellendale, North Dakota.

U.S. Weather Bureau.

Table 15. - Recommended farm organization and estimated annual receipts and expenses for a 320-acre tractor-operated farm, located in the heavy soil area, Sargent County No. Dak.

Crop Organization

Crop	Acres	Yield per Acre	Production	Operator's share	Feed and Seed	Sales Amount	Sales Price per bu.	Sales Value
						Bu.	Dol.	Dol.
Wheat	40	15 bu.	600	300	88	212	.75	159
Corn	55	22 bu.	1,210	1,210	1,360			
Oats	40	35 bu.	1,400	700	524	176	.25	44
Barley	30	23 bu.	690	345	301	44	.35	15
Rye	10	14 bu.	140	70		70	.38	27
Millet	10	23 bu.	230	115		115	.35	40
Cane	5	2 T.	10	10	10			
Alfalfa	15	1½ T.	23	23	21			
S. C. Pasture	20							
Total Cropland	225							
Native hay	30	1 T.	30	30	21			
Native pasture	50							
Farmstead	15							
Total acres	320							

Livestock Organization

Livestock	No.	Born	Used in Home	Production per Unit	Sales Amount	Sales Price per lb.	Sales Value
						Dol.	Dol.
Horses	2						
Milk cows	10		300-lbs B.F.	175 lbs. B.F.	2 @ 1,000 lbs.	.05	100
					1,450 lbs. B.F.	.25	362
Calves fed	6				6 @ 450 lbs.	.08	456
Calves		9	1				
Heifers	4						
Bull	1						
Sows	8				8 @ 350 lbs.	.05	140
Pigs		48	2	8 kept 1/	38 @ 225 lbs.	.07	598
Ewes	30			10 lbs. wool	10 @ 120 lbs.	.03	36
					300 lbs. wool	.20	60
Lambs		30		10 kept 1/	20 @ 90 lbs.	.08½	153
Chickens	75	150 2/	50	75 kept 1/	75	.50	38
			200 doz.	7 dozen	325 doz. eggs	.15	49
Turkeys	8	80	1	8 kept 1/	79 @ 15 lbs.	.18	213

Continued

Table 15. - Recommended farm organization and estimated annual receipts and expenses for a 320-acre tractor-operated farm, located in the heavy soil area, Sargent County, No. Dak., - Continued

Cash farm expenses

Item	Amount
	Dollars
Cash rent	195
Taxes	20
Feed purchased	165
Seed purchased	12
Livestock purchased	12
Threshing	87
Twine	14
Shelling corn	30
Repairs on farm machinery	82
Tractor (includes gas and oil)	180
Gas and oil for farm use	10
Automobile for farm use (includes gas and oil)	104
Ram charge	5
Medicine and veterinary	20
Trucking	77
Hired labor	50
Miscellaneous	50
Total	1,113

Summary

Item	Amount
	Dollars
Income from livestock and livestock products	2,205
Income from crops	285
Gross cash income	2,490
Cash expenses	1,113
Net cash income	1,377
Non-cash farm expenses 3/	452
Labor income 4/	925

1/ Retained to replace aged breeding stock sold.
2/ Purchased.
3/ Depreciation and interest on investment.
4/ Income for labor and management of the farmer and family.

Table 16. - Recommended farm organization and estimated annual receipts and expenses for a 320-acre horse-operated farm, located in the heavy soil area, Sargent County, No. Dak.

Crop organization

Crop	Acres	Yield per Acre	Production	Operator's share	Feed and Seed	Sales Amount	Sales Price per bu.	Sales Value
						Bu.	Dol.	Dol.
Wheat	40	15 bu.	600	300	88	212	.75	159
Corn	55	22 bu.	1,210	1,210	1,453			
Oats	40	35 bu.	1,400	700	745			
Barley	30	23 bu.	690	345	301	44	.35	15
Rye	10	14 bu.	140	70		70	.38	27
Millet	10	23 bu.	230	115		115	.35	40
Cane	5	2 T.	10	10	10			
Alfalfa hay	15	1½ T.	23	23	21			
S. C. pasture	20							
Total cropland	225							
Native hay	30	1 T.	30	30	30			
Native pasture	50							
Farmstead	15							
Total acres	320							

Livestock organization

Livestock	No.	Born	Used in Home	Production per Unit	Sales Amount	Sales Price per lb.	Sales Value
						Dol.	Dol.
Horses	6				1	100.00	100
Colts	2	1					
Milk cows	10		300-400 lbs B.F.	175 lbs. B.F.	2 @ 1,000 lbs.	.05	100
					1,450 lbs. B.F.	.25	362
Heifers	4						
Calves fed	6				6 @ 950 lbs.	.08	456
Calves		9	1				
Bull	1						
Sows	8				8 @ 350 lbs.	.05	140
Pigs		48	2	8 kept 1/	38 @ 225 lbs.	.07	598
Ewes	30			10 lbs. wool	10 @ 120 lbs.	.03	36
					300 lbs. wool	.20	60
Lambs		30		10 kept 1/	20 @ 90 lbs.	.08½	153
Chickens	75	150 2/	50	75 kept 1/	75	.50	38
			200 doz.	7 dozen	325 doz. eggs	.15	49
Turkeys	8	80	1	8 kept 1/	79 @ 15 lbs.	.18	213

Continued

Table 16. - Recommended farm organization and estimated annual receipts and expenses for a 320-acre horse-operated farm, located in the heavy soil area, Sargent County, No. Dak. - Continued

Cash farm expenses

Item	Amount
	Dollars
Cash rent	195
Taxes	20
Feed purchased	209
Seed purchased	12
Livestock purchased	12
Threshing	79
Twine	14
Shelling corn	30
Feed grinding	54
Repairs on farm machinery	65
Gas and oil for farm use	10
Automobile for farm use (includes gas and oil)	104
Ram charge	5
Breeding fees	15
Medicine and veterinary	25
Trucking	77
Hired labor	100
Miscellaneous	50
Total	1,076

Summary

Item	Amount
	Dollars
Income from livestock and livestock products	2,305
Income from crops	241
Gross cash income	2,546
Cash expenses	1,076
Net cash income	1,470
Non-cash farm expenses 3/	364
Labor income 4/	1,106

1/ Retained to replace aged breeding stock sold.
2/ Purchased.
3/ Depreciation and interest on investment.
4/ Income for labor and management of the farmer and family.

Table 17. - Farm organization and estimated annual receipts and expenses based on farm schedules from farms of around 480 acres, located in the heavy soil area, Sargent County, No. Dak.

Crop	Acres	Yield per Acre	Production	Operator's share	Feed and Seed	Sales Amount	Sales Price per bu.	Sales Value
						Bu.	Dol.	Dol.
Wheat	85	15 bu.	1,275	637	102	536	.75	402
Corn	65	22 bu.	1,430	1,430	1,779			
Oats	40	35 bu.	1,400	700	588	112	.25	28
Barley	30	23 bu.	690	345	345			
Rye	30	14 bu.	420	210		210	.38	80
Millet	20	23 bu.	460	230	110	120	.35	42
Cane	35							
Alfalfa	30	1½ T.	45	45	45			
S. C. pasture	25							
Total cropland	360							
Native hay	40	1 T.	40	40	21			
Native pasture	65							
Farmstead	15							
Total acres	480							

Livestock organization

Livestock	No.	Born	Used in Home	Production per Unit	Sales Amount	Sales Price per lb.	Sales Value
						Dol.	Dol.
Horses	4						
Milk cows	12		300-lbs. B.F.	175 lbs. B.F.	2 @ 1,000 lbs. 1,800 lbs. B.F.	.05 .25	100 450
Calves fed	8				8 @ 950 lbs.	.08	608
Calves		11	1				
Heifers	4						
Bull	1						
Sows	10				10 @ 350 lbs.	.05	175
Pigs		60	2	10 kept 1/	48 @ 225 lbs.	.07	756
Ewes	50			10 lbs. wool	13 @ 120 lbs. 500 lbs. wool	.03 .20	47 100
Lambs		50		13 kept 1/	37 @ 90 lbs.	.08½	283
Chickens	100	250 2/	50 200 doz.	100 kept 1/ 7 dozen	100 500 doz. eggs	.50 .15	50 75
Turkeys	8	80	1	8 kept 1/	79 @ 15 lbs.	.18	213

Continued

Table 17. - Farm organization and estimated annual receipts and expenses based on farm schedules from farms of around 480 acres, located in the heavy soil area, Sargent County, No. Dak. - Continued

Cash farm expenses

Item	Amount
	Dollars
Cash rent	270
Taxes	25
Feed purchased	264
Seed purchased	18
Livestock purchased	20
Threshing	117
Twine	21
Shelling corn	45
Repairs on farm machinery	92
Tractor (includes gas and oil)	200
Gas and oil for farm use	10
Automobile for farm use (includes gas and oil)	142
Ram charge	5
Medicine and veterinary	25
Trucking	101
Hired labor	150
Miscellaneous	60
Total	1,565

Summary

Item	Amount
	Dollars
Income from livestock and livestock products	2,857
Income from crops	552
Gross cash income	3,409
Cash expenses	1,565
Net cash income	1,844
Non-cash farm expenses 3/	510
Labor income 4/	1,334

1/ Retained to replace good breeding stock sold.
2/ Purchased.
3/ Depreciation and interest on investment.
4/ Income for labor and management of the farmer and family.

Table 18. - Recommended farm organization and estimated receipts and expenses for a 320-acre horse-operated farm, located in the sandy soil area, Sargent County, N. Dak.

Crop Organization

Crop	Acres	Yield per Acre	Production	Operator's share	Feed and Seed	Sales Amount	Sales Price per bu.	Sales Value
						Bu.	Dol.	Dol.
Wheat	15	11 bu.	165	124	81	43	.75	32
Corn	65	28 bu.	1,820	1,820	1,243	577	.45	260
Oats	30	23 bu.	690	518	798			
Barley	20	17 bu.	340	255	235			
Alfalfa hay	20	2 T.	40	40	35			
S. C. pasture	30							
Total cropland	180							
Native hay	40	3/4 T.	30	30	17			
Native pasture	80							
Farmstead	20							
Total acres	320							

Livestock Organization

Livestock	No.	Born	Used in Home	Production per Unit	Sales Amount	Sales Price per lb.	Sales Value
						Dol.	Dol.
Horses	6						
Milk cows	10		300-lbs. B.F.	175 lbs. B.F.	1 @ 1,000 lbs.	.03½	35
					1,450 lbs. B.F.	.25	362
Heifers	2			1 kept 1/			
Calves fed	8		1		7 @ 850 lbs.	.08	476
Calves		9					
Bull	1						
Brood sows	8				8 @ 350 lbs.	.05	140
Pigs		40	2	8 kept 1/	30 @ 200 lbs.	.07	420
Ewes	20			10 lbs. wool	5 @ 120 lbs.	.03	18
					200 lbs. wool	.20	40
Lambs		20		5 kept 1/	15 @ 85 lbs.	.08	102
Chickens	100	250 2/	50	100 kept 1/	100	.50	50
			200 doz.	7 dozen	500 doz. eggs	.15	75

Continued

Table 18. - Recommended farm organization and estimated receipts and expenses for a 320-acre horse-operated farm, located in the sandy soil area, Sargent County, No. Dak. - Continued

Cash Farm Expenses

Item	Amount
	Dollars
Cash rent	208
Taxes	25
Feed purchased	163
Seed purchased	20
Livestock purchased	20
Threshing	56
Twine	13
Shelling corn	30
Feed grinding	30
Repairs on farm machinery	50
Automobile for farm use (includes gas and oil)	102
Ram charge	5
Medicine and veterinary	30
Trucking	70
Hired labor	126
Total	948

Summary

Item	Amount
	Dollars
Income from livestock and livestock products	1,718
Income from crops	292
Gross cash income	2,010
Cash expenses	948
Net cash income	1,062
Non-cash farm expenses 3/	380
Labor income 4/	682

1/ Retained to replace aged breeding stock sold.
2/ Purchased.
3/ Depreciation and interest on investment.
4/ Income for labor and management of the farmer and family.

Table 19. - Recommended farm organization and estimated annual receipts and expenses for a 480-acre tractor-operated farm, located in the sandy soil area, Sargent County, N. Dak.

Crop Organization

Crop	Acres	Yield per Acre	Production	Operator's share	Feed and seed	Sales Amount	Sales Price per bu.	Sales Value
						Bu.	Dol.	Dol.
Wheat	30	10 bu.	300	225	101	124	.75	93
Rye	20	11 bu.	220	165	25	140	.50	70
Corn	90	28 bu.	2,520	2,520	1,751	769	.45	346
Oats	40	21 bu.	840	630	630			
Barley	20	15 bu.	300	225	225			
Alfalfa hay	30	2 T.	60	60	60			
S. C. pasture	30							
Total cropland	260							
Native hay	70	3/4 T.	52	52	52			
Native pasture	130							
Farmstead	20							
Total acres	480							

Livestock Organization

Livestock	No.	Born	Used in Home	Production per Unit	Sales Amount	Sales Price per lb.	Sales Value
						Dol.	Dol.
Horses	4						
Milk cows	12		300-lbs. B.F.	175 lbs. B.F.	2 @ 1,000 lbs.	.03½	70
					1,800 lbs. B.F.	.25	450
Beef cows	4						
Heifers	4			2 kept 1/			
Calves fed	12		1		11 @ 850 lbs.	.08	748
Calves		14					
Bull	1						
Sows	10				10 @ 350 lbs.	.05	175
Pigs		50	2	10 kept 1/	38 @ 200 lbs.	.07	532
Ewes	25			10 lbs. wool	6 @ 125 lbs.	.03	22
					250 lbs. wool	.20	50
Lambs		25		6 kept 1/	19 @ 85 lbs.	.08	129
Chickens	100	250	50	100 kept 1/	100	.50	50
			200	7 doz.	500 doz. eggs	.15	75

Continued

Table 19. - Recommended farm organization and estimated annual receipts and expenses for a 480-acre tractor-operated farm, located in the sandy soil area, Sargent County, No. Dak., - Continued

Cash farm expenses

Item	Amount
	Dollars
Cash rent	295
Taxes	30
Feed purchased	158
Seed purchased	25
Livestock purchased	20
Threshing	85
Twine	22
Shelling corn	40
Repairs on farm machinery	75
Tractor	175
Gas and oil for farm use	10
Automobile for farm use	121
Ram charge	5
Medicine and veterinary	45
Trucking	101
Hired labor	300
Total	1,507

Summary

Item	Amount
	Dollars
Income from livestock and livestock products	2,301
Income from crops	509
Gross cash income	2,810
Cash expenses	1,507
Net cash income	1,303
Non-cash farm expenses 3/	522
Labor income 4/	781

1/ Retained to replace aged breeding stock sold.
2/ Purchased.
3/ Depreciation and interest on investment.
4/ Income for labor and management of the farmer and family.

Table 20. - Recommended farm organization and estimated annual receipts and expenses for a 640-acre tractor-operated farm, located in the sandy soil area, Sargent County, No. Dak.

Crop organization

Crop	Acres	Yield per Acre	Production	Operator's share	Feed and Seed	Sales Amount	Sales Price per bu.	Sales Value
						Bu.	Dol.	Dol.
Wheat	20	10bu.	200	150	86	64	.75	48
Corn	100	27 bu.	2,700	2,700	2,672	28	.45	13
Oats	50	21 bu.	1,050	788	927			
Barley	30	15 bu.	450	338	359			
Rye	30	11 bu.	330	248	40	208	.50	104
Alfalfa hay	30	2 T.	60	66	67			
S. C. pasture	40							
Total cropland	300							
Native hay	120	3/4 T.	90					
Native pasture	200							
Farmstead	20							
Total acres	640							

Livestock organization

Livestock	No.	Born	Used in home	Production per unit	Sales Amount	Sales Price per lb.	Sales Value
						Dol.	Dol.
Horses	6						
Milk cows	12		300-lbs. B.F.	175 lbs. B.F.	2 @ 1,000 lbs.	.03½	70
					1,800 lbs. B.F.	.25	450
Beef cows	16				2 @ 1,000 lbs.	.03½	70
Heifers	8						
Calves fed	21		1		20 @ 850 lbs.	.08	1,360
Calves		25					
Bull	1						
Sows	12				12 @ 350 lbs.	.05	210
Pigs		60	2	12 kept 1/	46 @ 200 lbs.	.07	644
Ewes	50			10 lbs. wool	13 @ 120 lbs.	.03	47
					500 lbs. wool	.20	100
Lambs		50		13 kept 1/	37 @ 85 lbs.	.08	252
Chickens	100	250 2/	50	100 kept 1/	100	.50	50
			200 doz.	7 dozen	500 doz. eggs	.15	75

Continued

Table 20. - Recommended farm organization and estimated annual receipts and expenses for a 640-acre tractor-operated farm, located in the sandy soil area, Sargent County, No. Dak. - Continued

Cash farm expenses

Item	Amount
	Dollars
Cash rent	380
Taxes	35
Feed purchased	221
Seed purchased	30
Livestock purchased	20
Threshing	93
Twine	24
Shelling corn	45
Repairs on farm machinery	80
Tractor	200
Gas and oil for farm use	10
Automobile for farm use	140
Ram charge	5
Medicine and veterinary	50
Trucking	136
Hired labor	300
Miscellaneous	50
Total	1,819

Summary

Item	Amount
	Dollars
Income from livestock and livestock products	3,328
Income from crops	165
Gross cash income	3,493
Cash expenses	1,819
Net cash income	1,674
Non-cash farm expenses 3/	641
Labor income 4/	1,033

1/ Retained to replace aged breeding stock sold.
2/ Purchased.
3/ Depreciation and interest on investment.
4/ Income for labor and management of the farmer and family.

SCOPE AND METHOD OF THE STUDY

This study of Sargent County was initiated by the Bureau of Agricultural Economics in May 1938. The purpose was to provide background material for the county planning program for Sargent County and to demonstrate to Agricultural Extension Agents in other counties and other States the value of this type of material as a background for planning work in their counties.

Crop organization for every farm in the county was obtained from the files of the Agricultural Adjustment Administration, and the livestock organization for each farm was obtained from the County Assessor's records. Additional data from the Agricultural Adjustment Administration consisted of average size of each farm, acreages of cropland, acreages of pastureland, and the legal description of each farming unit. From the aerial photo maps of the Agricultural Adjustment Administration, a map showing the geography of crop and grassland was developed.

Although much of the material was in readily available form, considerable clerical help was required for analysis, interpretation, and drafting in order to prepare the data for presentation to the public groups. The Bureau of Agricultural Economics furnished almost all of the help, both clerical and technical, in carrying out this phase of the work.

As the farm-management problems of Sargent County appeared to be closely related to soils, it was believed desirable to provide background material in the form of a simplified soils map showing the geography of soils classified as to use suitability. Dr. E. F. Tyner, using as a basis the "Soil Survey for Sargent County", classified the soils into the following groups:

(1) Soils suitable for cultivation.

(2) Soils suitable for grass.

(3) Marginal soils suitable for cultivation only under favorable conditions.

The soil classification map, together with the information on farm organization, provided the basis through which planning groups could study the economic aspects of farm organization and size as related to soils.

The "Present Land Use Map of Sargent County", developed from aerial photographs, was prepared in order to show the geography of cropland and noncropland. Mapping of these items was rather accurate as the County Planning Committee used this map, together with soil productivity ratings developed by E. H. Tyner, in revising farm land valuations for tax-assessment purposes. The committees believed that present valuations for tax purposes were not in harmony with the productivity of the various soil types. They indicated that some of the land unsuitable for cultivation would have been regrassed had not the taxes been so high as to force the production of crops. The greater share of the land in Sargent County, has already been re-evaluated through county planning groups.

Farm-organization data used in classifying farms by type for this study were obtained from the files of the Sargent County Agricultural Adjustment Administration Office and the Sargent County tax assessor's office. This material consisted of data on crop organization obtained from the (Agricultural Adjustment Administration) files. Data on livestock organization had been obtained from the assessor's office, with the intention of using them for the classification of farms by type, but it was later found that such livestock data were unsuitable for use in classifying farms by type. Therefore, it was found necessary to develop a classification based entirely upon land use and crop organization. Classifications were developed for the following types of farms based on acreages of principal crops and land use: Stock ranches, livestock farms, general farms, cash-grain farms, cash-crop specialty farms, self-sufficing farms, and part-time farms. Farms were then classified according to their predominant type of cropping system, that is, whether or not either feed crops or cash crops constituted 60 percent or more of all land in crops.

Stock ranches consisted of operating units of more than 1,000 acres in size in which 80 percent or more of all land was in native grass.

Livestock farms consisted of operating units in which less than 80 percent of the total acreage was in native grass, and in which feed crops were the only predominant type of cropping system.

Cash crop farms consisted of operating units in which less than 80 percent of the total acreage was in native grass and in which cash crops were the only type of predominant cropping system.

Cash-crop farms were then divided into cash-grain farms and cash-crop specialty farms. The farms in which 40 percent or more of the crop acreage was devoted to production of specialty crops were classified as cash-crop specialty farms, and the remainder were classified as cash-grain farms.

General farms consisted of operating units in which less than 80 percent of the total acreage was in native grass and on which there was no predominant type of cropping system.

Part-time farms consisted of farms in which the operator had other sources of income of a nonagricultural nature.

Units were classified as self-sufficing farms when the farm was apparently devoted almost entirely to the production of food for home consumption.

On farms not classified as ranches, it was believed necessary to convert the pasture acreages to their equivalent in feed-crop acreages, insofar as grass was able to replace feed crops. This conversion factor was developed on the basis of a crop-reporting district and was the ratio between the number of feed units produced per average acre of cropland and the number of feed units produced per average acre of native grassland for that district.

Factual material developed from records of the Agricultural Adjustment Administration and from County Courthouse data served as a basis for a study of the suitable sizes and types of farms for two different kinds of soil areas within the county.

Two farm planning groups, one on the sandy soils and one on the heavy soils, have each held three meetings. Both groups have already developed farm budgets for minimum-economic units and two other budgets representing desirable sizes and types for the area which each group represented.

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